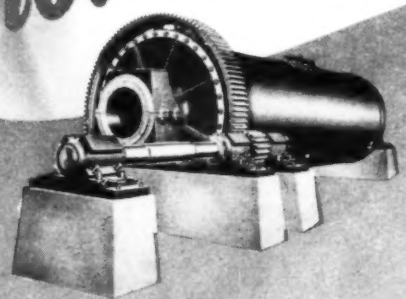
THE PAPER INDUSTRY and PAPER WORLD

AN EDUCATIONAL NEWS MAGAZINE — OCTOBER, 1945

TECHNOLOGY DEPT.

PUBLIC LIBRARY
DEC 1 1945
DETROIT

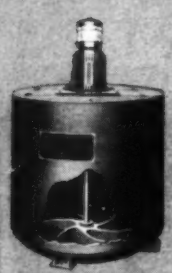
now - PAPER FOR PEACE!



with quality and lower costs profitably maintained by the efficient performance of...

PATTERSON

Satisfactory MACHINERY



THE PATTERSON FOUNDRY & MACHINE CO.

EAST LIVERPOOL, OHIO. U. S. A. Richard L. Cumming President

In Canada—THE PATTERSON FOUNDRY & MACHINE CO. (CANADA) LIMITED, LONDON, ONTARIO

R v.27[2] Oct. 1945 - Mar. 1946

On Sunday, August 5, a great many people were pessimistic about the Japanese war. Even money bets that it would last a year longer were common.

On Monday, August 6, the first atomic bomb hit Nippon. On Wednesday, Russia declared war on Japan. On Thursday, the second atomic bomb was dropped. On Friday, peace negotiations commenced. On Tuesday, August 14, eight days after the start of that historic week—the Japs surrendered unconditionally.

The Era of the War was ended; the Era of Peace had commenced.

Manufacturers of capital goods, like Harris-Seybold-Potter Company, had been manufacturing the materials of war.

The improved designs of their normal products which had been perfected in experimental and pilot models had not been allowed to interfere with war production.

Today, as the new era commences, we have clearance for making Harris offset and typographical presses, Seybold cutters and trimmers, paper drills and knife grinders.

This advertisement goes to the publisher September 1st. We are moving fast on the change-over. We have some important announcements to make as soon as we shift gears from war production to peace.

HARRIS - SEYBOLD - POTTER COMPANY, General Sales Offices, Cleveland 5, Ohio.

HARRIS ★ SEYBOLD

★ HARRIS PRESSES...SEYBOLD CUTTERS...RELATED MACHINES, EQUIPMENT AND SUPPLIES ★

Tech.

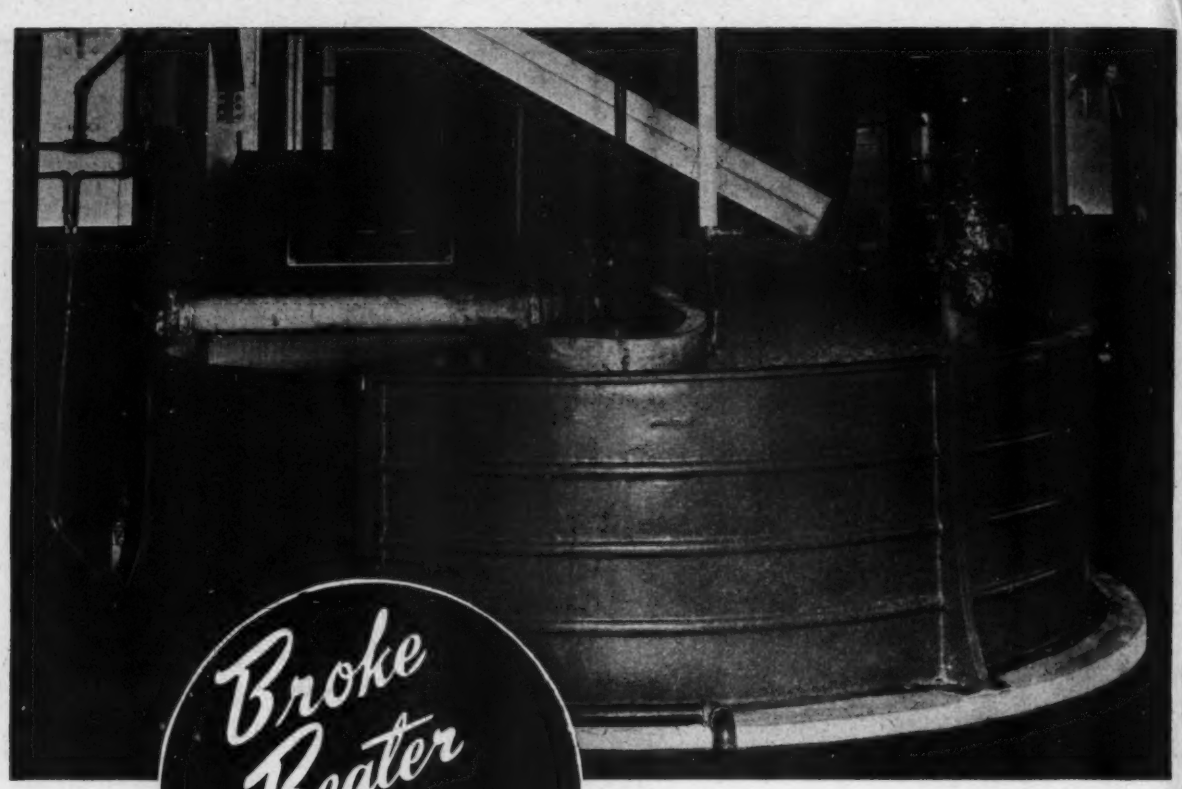
A newcomer you'll hear more about

Extreme *sensitivity* and *ruggedness* are the outstanding characteristics of this Beloit Air Guide (patent pending). It's another wartime development . . . designed to solve difficult guiding problems. Equipment pictured here is installed in the vertical felt run of a dual press on a high-speed machine. It's another example of Beloit engineering, and of the planning Beloit has underwritten for post-war work.

WHEN YOU BUY BELOIT . . . YOU BUY MORE THAN A MACHINE!

BELOIT

PAPER MACHINERY



Broke Beater BY VALLEY

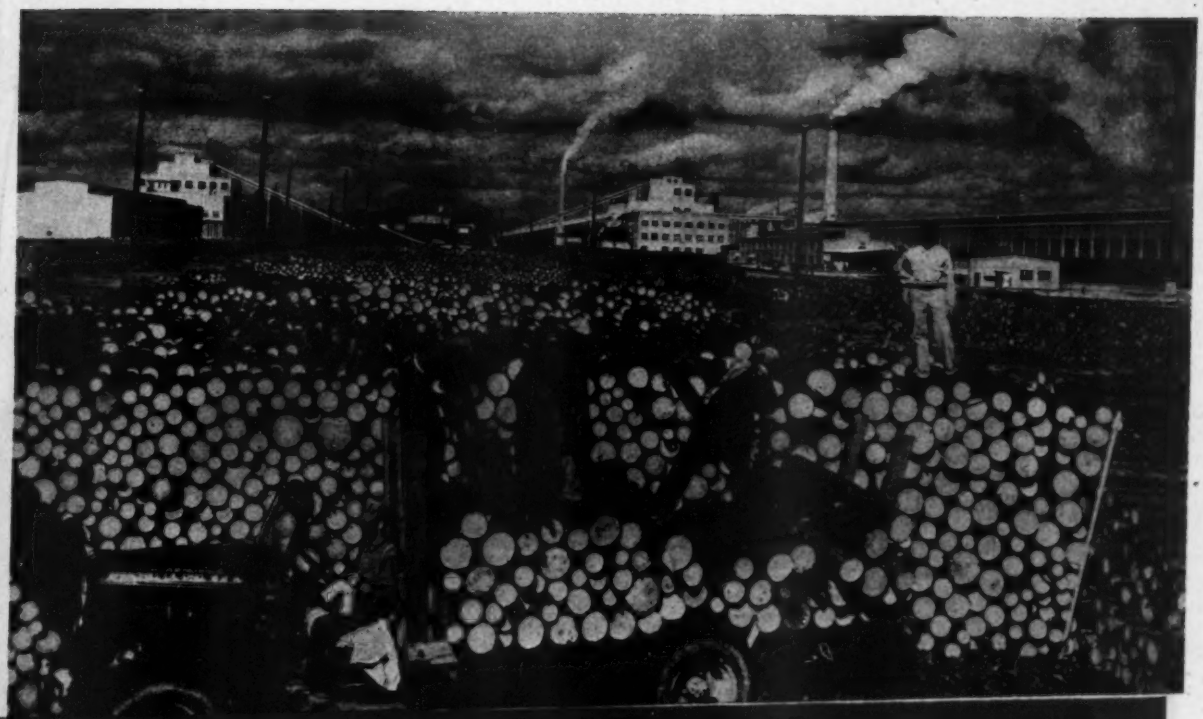
Valley has long been synonymous with high-performance beaters of all types. Here is one of a number of late pre-war installations of the famous Valley Broke Beater.

Our complete line includes Broke, Breaker, Paddle, Vortex and Hi-Speed Beaters of all sizes—as well as laboratory and semi-commercial beaters. Inquiries will be given full and careful attention.

VALLEY IRON WORKS COMPANY

APPLETON, WISCONSIN

Slices and Head Boxes • Screw Presses • Micro-Mist Spray Dampeners • Laboratory Equipment
Pulp Washing Systems • High-Speed Beaters • Breaker Beaters • Vortex Beaters • Plug Valves
Flat and Rotary Screens • Thickeners • Deckers • Paper Markers • Roll-Headers



FEWER OVERHAULS GREATER OPERATING ECONOMY

When you use the motor oil that . . .

- ★ Keeps engine parts clean
- ★ Prevents ring sticking
- ★ Protects modern bearings
- ★ Prevents scuffing, greatly reduces wear

BECAUSE it brings you all these benefits, nothing beats *Texaco D-303 Motor Oil* for keeping truck engines out of the shop and on the road. Engines lubricated with *D-303* deliver greater power, use less gas.

Texaco D-303 Motor Oil is an excellent example of how The Texas Company's constant research is applied to improve the natural properties of an oil. *D-303* is made in one of the world's largest refineries from carefully selected crudes to which modern Texaco processes add the valuable properties of detergency and dispersion — *detergency* to keep piston rings and engine parts clean, *dispersion* to hold deposit-forming materials in suspension until drained. Absolute uniformity is assured by skilled technicians who supervise every step of its production from well to finished product.

To make rear-end and transmission gears run more quietly, last longer, use Texaco transmission and differential lubricants.

Texaco Lubrication Engineering Service is available through more than 2300 Texaco distributing plants in the 48 States. Get in touch with the nearest one, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

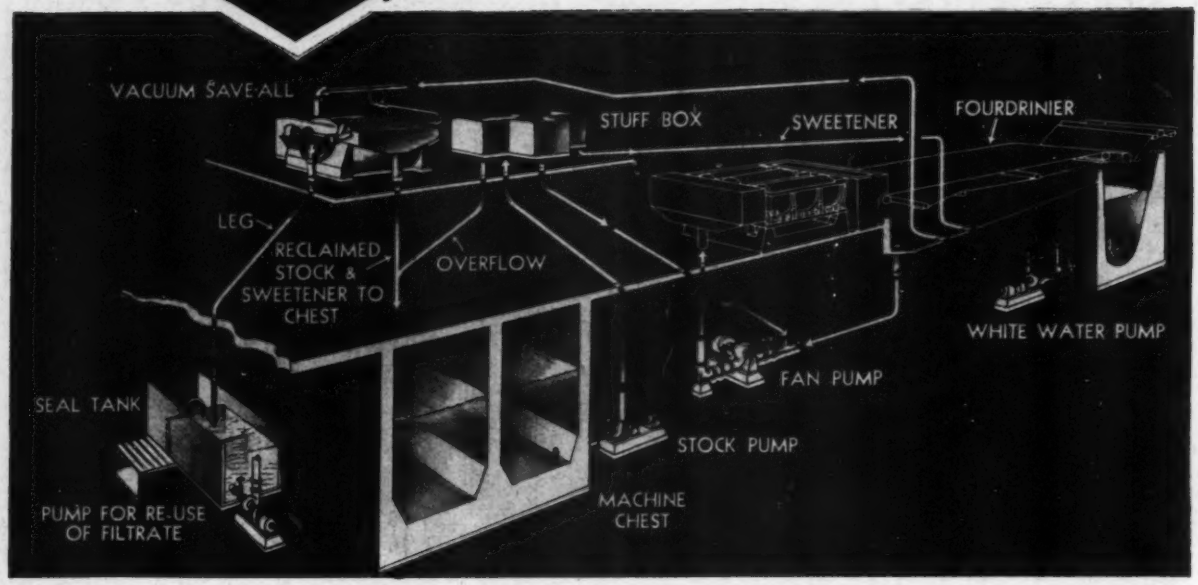
TEXACO Lubricants & Fuels

FOR THE PAPER INDUSTRY

TUNE IN THE TEXACO STAR THEATRE WITH JAMES MELTON EVERY SUNDAY NIGHT — CBS

IMPCO Vacuum SAVE-ALLS

–Rescue precious fibre
–End the nuisance of stream pollution



A typical Impco Vacuum Save-all System

IMPCO Vacuum Save-all systems recover as high as 95% of all white water solids, with filtrates as low as 0.2 lbs. per thousand gallons—depending on the grade of pulp.

The recovered fibre can be returned immediately as pulp furnish through the machine chest — appearing directly as additional paper tonnage—and without being graded as lower quality pulp.

In planning a Save-all system it is important to base the Save-all size upon individual tests for each paper machine.

We will gladly have an engineer call, run the tests and evaluate the savings which can be effected by our Save-alls.

Improved IMPCO

PAPER MACHINERY CORPORATION

NASHUA, NEW HAMPSHIRE

THE PAPER INDUSTRY and PAPER WORLD

(Reg. U.S. Pat. Off.)

VOLUME 27 - - - - - - OCTOBER, 1945 - - - - - - - NUMBER 7

—FEATURES—

Electronic Air Filtration ..... Harry J. Noles 1025
New Paper and Pulp Law Suits ..... Leo T. Parker 1027
Combining or Laminating Machines—Their Design and Application ..... Frank W. Egan 1030
Lightning Protection of Electric Equipment ..... E. G. Merrick 1034
Isolation and Analysis of Hemicellulose Fractions from Aspen Holocellulose; an Addendum ..... Ernest Anderson and Louis E. Wise 1037
German Research on the Use of Sodium Chlorite in the Manufacture of Wood Pulp and Cellulose ..... G. P. Vincent and J. F. White 1038
Wartime Achievements of the Pulp and Paper Industry and the Reconversion Outlook 1094
Handling the Disabled Veteran 1098
Fiber Molding Process for Insulating Purposes 1100
Use of Liquid Sulphur Dioxide in Fortifying Sulphite Cooking Liquors 1102
Convention Papers . . . Abridged 1104

—NEWS—

Papermaking in Pace with Progress 990
Trade Winds 991
Allied 1046
Associations 1054
Safety 1064
Names in the News 1076
Personals 1076
Necrology 1084

—DEPARTMENTS—

Editorials 1017
Current Thought 1018
Paper Sketches 1040
Safety Contest Scores 1066
Coming Events .....
Practical Shorts 1091
New Equipment and Supplies 1112
Technical Developments .....
Papermaking Patents .....
New Publications 1116
Current Market Quotations .....
Index to Advertisers 1121

***Published monthly by* FRITZ PUBLICATIONS, INC., 59 E. Van Buren St., Chicago 5, Ill.**

EDWARD B. FRITZ, Founder
A. C. BRUCE, Secretary
EDGAR C. FARREN, Production Manager
A. SCOTT DOWD, President and Gen. Mgr.
HARRY E. WESTON, Editorial Director
G. E. VON ROSEN, Circulation Director
A. C. L. FRITZ, Vice Pres. and Treas.
BESSE MERRITHEW, Editor
C. J. ELWELL, Circulation Field Rep.

ADVERTISING REPRESENTATIVES

New York • 9 Rockefeller Plaza • Circle 7-3085 • New York 20, N. Y.
Cleveland • L. M. PERKINS • 3277 DeSota Ave. • Yellowstone 6504 • Cleveland Heights 18, Ohio
Chicago • JOHN D. HENDERSON • 59 E. Van Buren Street • Wabash 3643 • Chicago 5, Illinois
San Francisco • NOURSE ASSOCIATES • 582 Market Street • Exbrook 6685 • San Francisco 4, Calif.
Los Angeles • NOURSE ASSOCIATES • 412 West 6th Street • Vandike 5875 • Los Angeles 14, Calif.

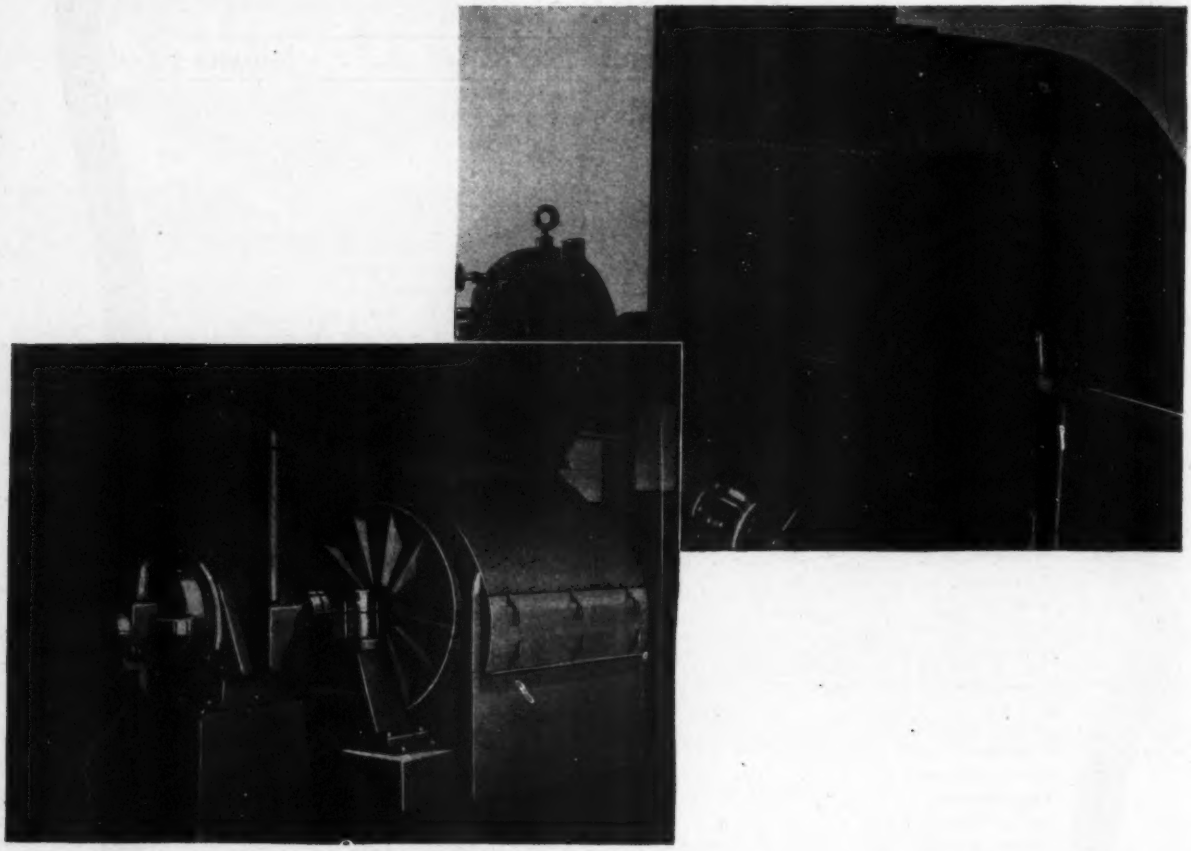
THE PAPER INDUSTRY and PAPER WORLD is indexed regularly in "The Industrial Arts Index." An index to each volume is issued annually by the publisher as Section Two of the April number.

Copyright 1945 by Fritz Publications, Inc.

Member:
Audit Bureau of Circulation
Associated Business Papers, Inc.

Entered as second class matter June 29, 1938, at the post office at Chicago, Ill., under the Act of March 3, 1879. Subscriptions in the United States, U. S. Possessions, Canada, Cuba and Mexico, $2.00 for one year, $3.00 for two years. All other countries $3.00 for one year, $5.00 for two years.

LOWER POWER COSTS
start in the boiler room—



● Every engineer knows that low cost steam comes from good fuel, burned at highest efficiency. To get this highest efficiency, draft fans must perform at their peak efficiency. More than this, however, they must "stay on the job" so that shut-downs for fan maintenance are not frequent. Buffalo Forced and Induced Draft Fans have an excellent reputation for durability. They are designed and built by men with a 66-year record of building good fans. Your power plant deserves the best draft fans obtainable. Why not let Buffalo engineers make recommendations?

BUFFALO FORGE COMPANY

213 Mortimer St. **Buffalo, N. Y.**

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

"Buffalo" **MECHANICAL DRAFT APPARATUS**

Back to Pre-War Quality

● General Chemical Aluminum Sulfate is back to pre-war quality . . . eliminating the emergency "war grade" product necessary during the critical period of raw material shortages.

Once again American Industry has at its command the superior standard-grade Alum of high strength and low insoluble content for which the Company has always been known. And *today, as in the past, General Chemical filter and paper makers' Alum more than meets Industry's pre-war specifications,* with its quality and purity remaining uniform—lot after lot, shipment after shipment.

This superior product is available in lump, ground, and powdered sizes from conveniently located plants and shipping points throughout the nation. . . . For immediate delivery, phone or write the nearest General Chemical Sales & Technical Service Office listed below.

BASIC CHEMICALS
GENERAL CHEMICAL COMPANY
FOR AMERICAN INDUSTRY

GENERAL CHEMICAL COMPANY
40 Rector Street • New York 6, N. Y.

Sales and Technical Service Offices: Atlanta • Baltimore • Boston • Bridgeport (Conn.) Buffalo • Charlotte (N. C.) • Chicago • Cleveland • Denver • Detroit • Houston • Kansas City • Los Angeles • Minneapolis • New York • Philadelphia • Pittsburgh • Providence (R. I.) San Francisco • Seattle • St. Louis • Utica (N. Y.) • Wenatchee & Yakima (Wash.)
In Wisconsin: General Chemical Wisconsin Corp., Milwaukee, Wis.
In Canada: The Nichols Chemical Company, Limited • Montreal • Toronto • Vancouver

BEARING CAPACITY

for tomorrow's heavier machine loads...

ROLLWAY RIGHT-ANGLE LOADING

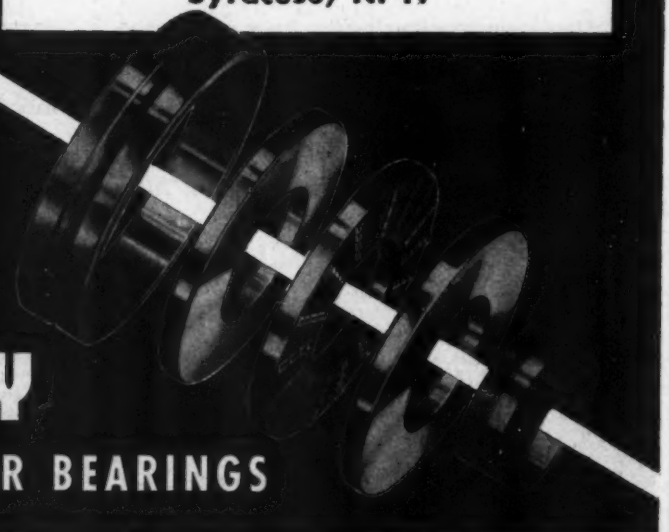
Change to Rollway Right Angle Loading

In the drive for postwar production . . . for competitive advantage in postwar markets . . . machines will be pushed to new limits. Bearings which served reasonably well under war conditions will now lack the freedom from service attention, the life expectancy, the load capacity required for satisfactory operations on new peacetime output.

That's when it will pay to change to Rollway Solid-Cylindrical Roller Bearings. Bearings that give you more metal to carry the load . . . longer line contact with the race . . . and lower unit pressures. Rollway Right-Angle Loading splits compound loads into the two components of *pure radial* and *pure thrust* . . . carries each of these on separate roller assemblies. Total load magnitudes per bearing are lower, and are carried perpendicular to the roller axis. There are no oblique resultants, no complicated stresses, no tendency for the rollers to pinch out from between the race. The result . . . less rubbing friction, less roller-end wear back.

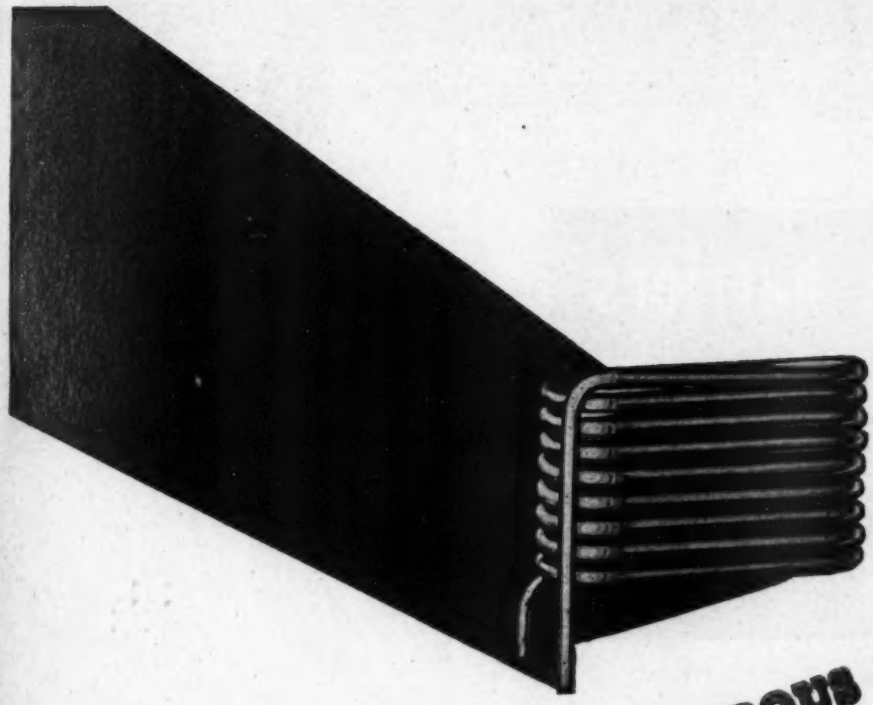
ROLLWAY BEARING CO., INC.
Syracuse, N. Y.

Find out today how Rollway Right-Angle Loading can improve your bearing performance. Just send a print of your assembly with specification of load, speed and type of service for confidential analysis and recommendation. No charge. No obligation.



ROLLWAY
CYLINDRICAL ROLLER BEARINGS

SALES OFFICES: Philadelphia • Boston • Pittsburgh • Youngstown • Cleveland • Detroit • Chicago • St. Paul • Houston • Tulsa • Los Angeles



MINUTE COILS CURE MONSTROUS HEADACHE

THE threat of a disastrous production stoppage! But Flori ingenuity saved the day . . .

Only a few tiny heat transfer coils needed but specifications presented the impossible:

> Large surface, close bends for small area, extremely light weight, yet great strength.

Solution: Flori craftsman reinforced the bends with an alloy metal coating, fused on by acetylene flame.

Whether your fabrication "headaches" are measured in inches or yards, bring them to Flori. We're specialists at curing the worst ones in a hurry.

FLORI FABRICATION

IF IT'S FABRICATION . . CONTACT FLORI

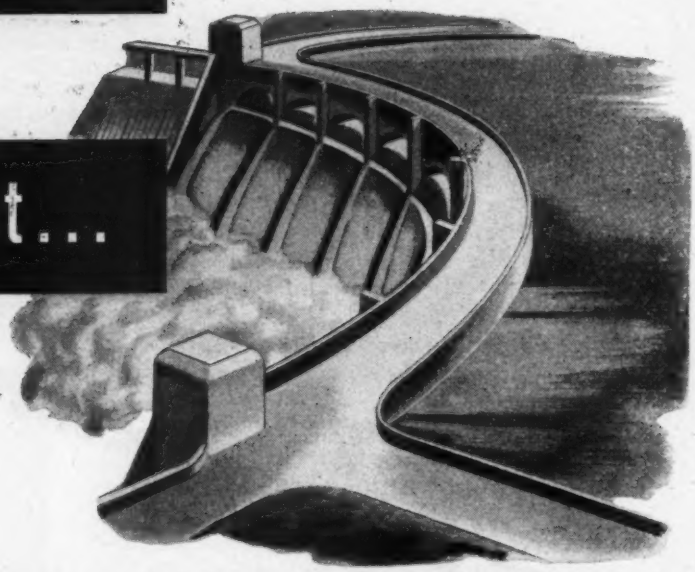
THE FLORI PIPE COMPANY • ST. LOUIS 15 • CHICAGO 47

WORLD'S LARGEST PRODUCER OF SYNTHETIC RESINS

RCI

two water barriers

you can trust...



for wet-strength paper

P426 BECKAMINE

for water-resistant adhesives

P364 BECKAMINE

P-426 Beckamine—A urea-formaldehyde resin which heightens wet-strength and also increases tensile strength, fold and mullin. Can be applied in the beater, fan pump or head box or directly to the sheet at the size press. Exceptionally stable, too.

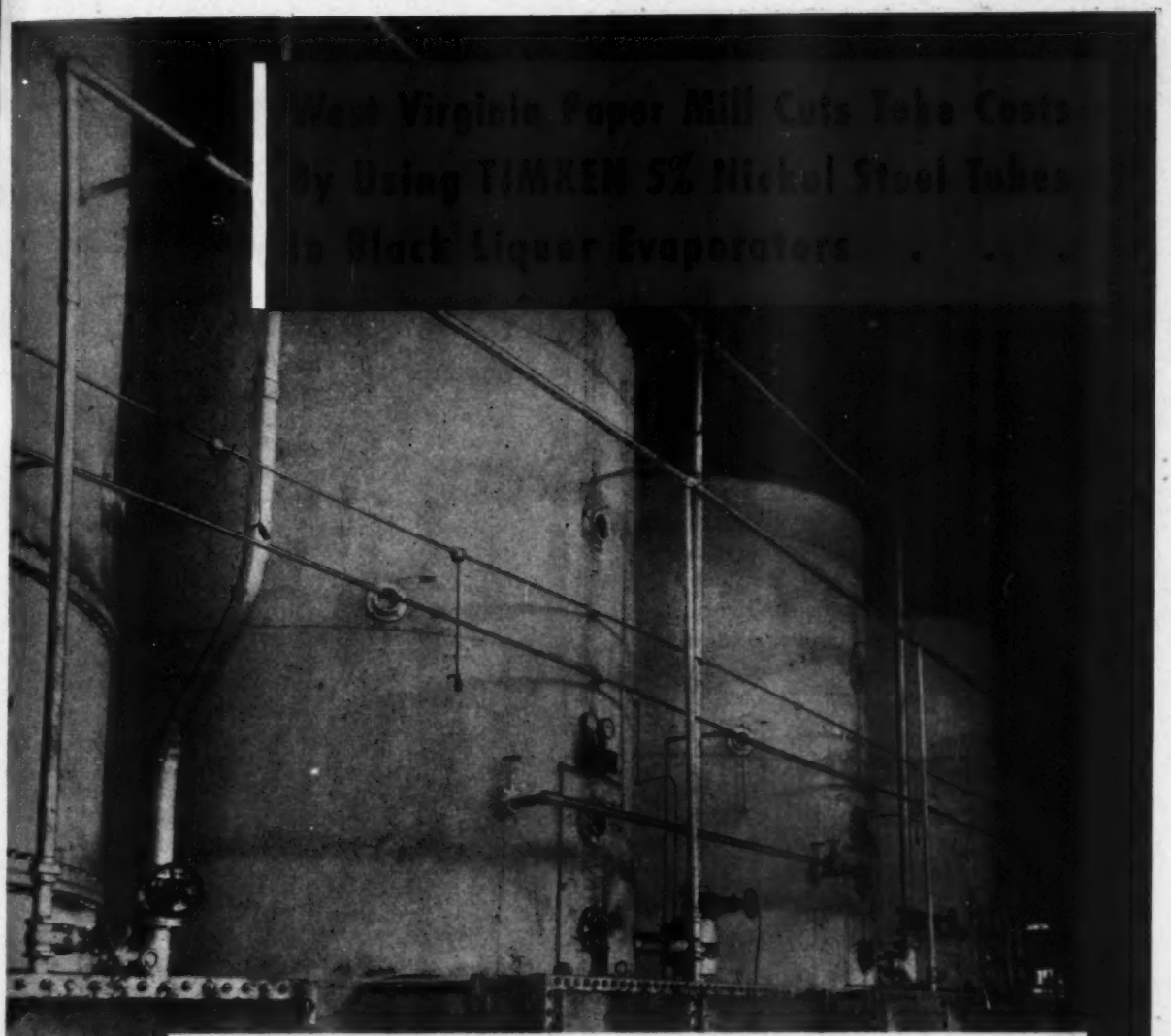
P-364 Beckamine—A low-cost resin for V-Board adhesives imparting exceptional water resistance. Low formaldehyde content minimizes unpleasant fumes in formulating. Available in any quantity. For details write the Sales Department at Detroit.

REICHHOLD CHEMICALS, INC.

General Offices and Main Plant, Detroit 20, Michigan

Other Plants:
Brooklyn, New York • Elizabeth, New Jersey • South San Francisco, California • Tuscaloosa, Alabama • Liverpool, England • Paris, France • Sydney, Australia

SYNTHETIC RESINS • CHEMICAL COLORS • PHENOLIC PLASTICS • INDUSTRIAL CHEMICALS



By using Timken Seamless Tubes of 5% nickel steel in Black Liquor Evaporators, The West Virginia Pulp and Paper Company, cut tube costs and reduced expensive downtime which enabled them to meet urgent production schedules on time.

Timken Seamless Tubes remained in service for 3 years. This was the longest tube life ever obtained. Other tubes had to be replaced after 6 months to 1½ years service.

It's no happenstance that Timken Seamless Tubes were able to provide from two to six times the life of other tubes. But it is due to the fact that they have been specially designed to combat the corrosive elements encountered in Black Liquor Evaporators.

Timken Seamless Steel Tubes of 5% nickel steel cut costs for The West Virginia Pulp and Paper Company. They will cut your costs too, if you will specify them when you plan new construction or replacements. Steel and Tube Division, The Timken Roller Bearing Company, Canton 6, Ohio.

TIMKEN
SEAMLESS STEEL TUBES

EVERLASTING

against the ravages of time

For countless ages, the Pyramids of Egypt have withstood the disintegrating forces of time and the elements. In comparison with the span of human life, the Pyramids are everlasting. In applications without number, Harper bolts, nuts and other fastenings resist rust, corrosion and other destructive conditions. Compared with assemblies they hold together . . . or with common steel bolts . . . Harper Fastenings are everlasting.

everlasting fastenings

Harper stocks include over 4360 items of bolts, screws, nails, and other fastenings made of brass, bronze, copper, Monel or stainless (none of common steel). Specials made to order. Write for 104 page 4-color catalog.

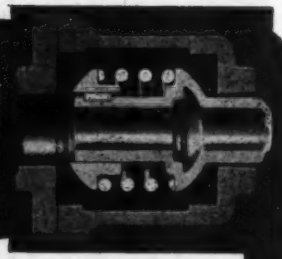
THE H. M. HARPER CO.
2647 FLETCHER ST. • CHICAGO 18, ILL.

BRANCH OFFICES:
New York City • Philadelphia
Los Angeles • Milwaukee
Cincinnati • Houston
Representatives in Principal Cities

BRASS • BRONZE
COPPER • MONEL
STAINLESS

HARPER
Chicago

JOHNSON *Rotary Pressure* JOINTS



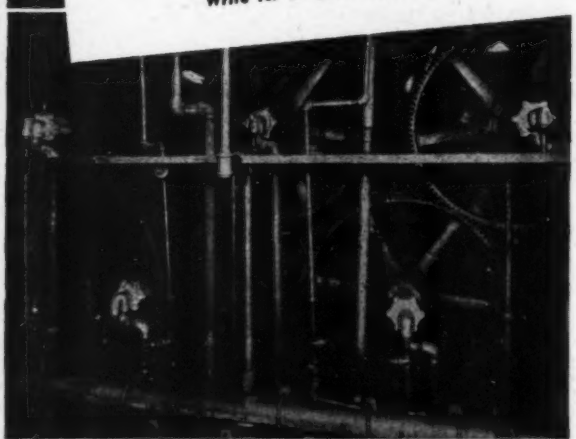
YEARS AHEAD IN DESIGN— *and right in the nick of time*

● Compared to the old style stuffing boxes and steam fits, the Johnson Rotary Pressure Joint is literally years ahead. Fortunately it was ready and waiting when today's call for more and more production came along.

Its packless, self-oiling, self-adjusting, self-aligning design has released for other work countless man-hours otherwise needed for maintenance. It has saved much valuable production time otherwise lost when machines are shut down to repack stuffing boxes or repair the ravages of misalignment. The way it lends itself to modern methods of syphon drainage has helped to step up operating efficiency in hundreds of mills.

Today these time-saving, production-boosting features of the Johnson Joint are of first consideration. At the same time remember that the Johnson Joint can pay its own way out of savings. That will give you an idea of the peacetime possibilties of Johnson Joints, and of the mill that is equipped with them.

Write for complete information



The Johnson Corporation
845 WOOD STREET — THREE RIVERS, MICH.

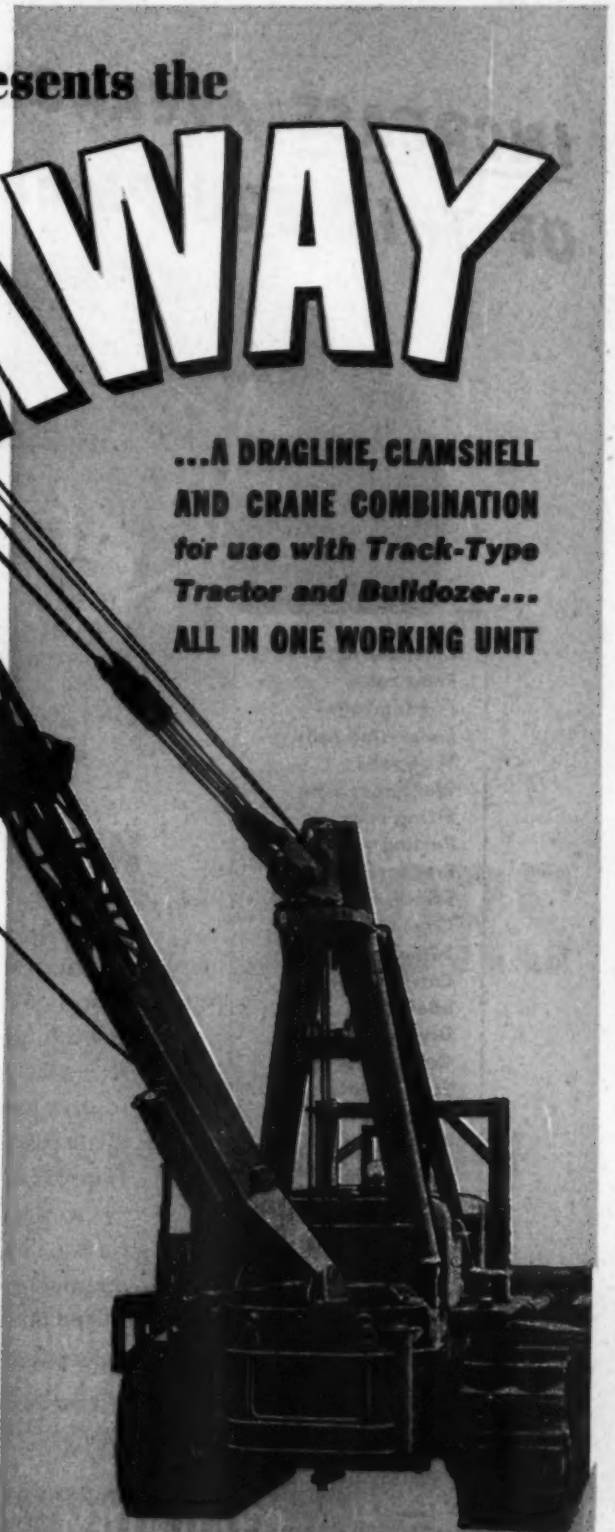
MAKE YOUR COMPRESSED AIR COME CLEAN

Combining the two best principles of separation—expansion and change of direction—the Johnson Separator removes more than 99% of all moisture and dirt from compressed air lines. Simple, trouble free construction assures utmost dependability and long life. Complete range of sizes—write for literature.

HYSTER proudly presents the

HYSTAWAY

...A DRAGLINE, CLAMSHELL AND CRANE COMBINATION *for use with Track-Type Tractor and Bulldozer...* ALL IN ONE WORKING UNIT



Multiplies the production use of your "CATERPILLAR" DIESEL TRACTOR...

- ✓ **SIZES.** Available for the "Caterpillar" models D6, D7, D8.
- ✓ **DRAGLINE AND CLAMSHELL.** Handles (on a D7) ½ cu. yd. dragline bucket; ⅜ cu. yd. digging clamshell or ½ yd. rehandling clamshell. Other models in proportionate capacities.
- ✓ **CRANE.** Swinging live boom, with maximum lifting capacities in any position.
- ✓ **MOUNTING.** On in 2 hours (with 2 men); off in 1 hour.
- ✓ **MOBILITY.** Full tractor mobility is retained. Crawler track oscillation is not impeded. Tractor rigidity when desired is accomplished by crank control at masthead.
- ✓ **OPERATION.** Conventional shovel and crane controls. 240° swing at speed of 4.5 RPM.

THIS is the most important product announcement Hyster Company has made in the 16 years we have specialized in building tractor equipment.

The addition of a Hystaway to a "Caterpillar" track-type tractor gives you *one piece* of production machinery that combines tractor—bulldozer—dragline, clamshell and crane.

Back of Hystaway lies the best engineering skill in the tractor equipment business. Years of field tests in various sections, under all working conditions, have proved Hystaway's performance, stamina, versatility.

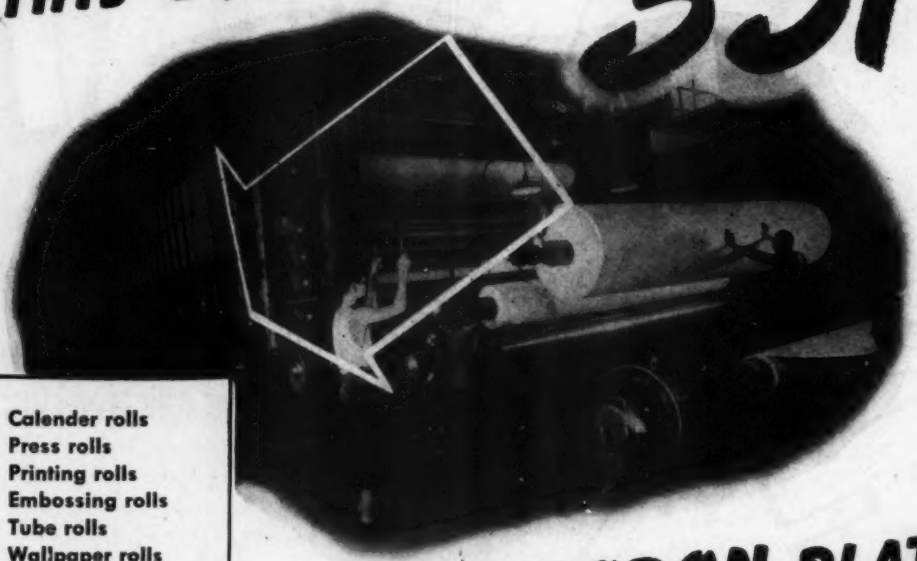
READY. Completely illustrated booklet on Hystaway—how it's built—what it does—how it does it. Write for your copy.

Sold and serviced by "Caterpillar" dealers and distributors throughout the world.

HYSTER COMPANY

2939 N.E. Clackamas, Portland 8, Ore.
1839 North Adams, Peoria 3, Illinois

INCREASE AVERAGE PRODUCTIVE LIFE OF THIS EQUIPMENT 331%



- Calender rolls
- Press rolls
- Printing rolls
- Embossing rolls
- Tube rolls
- Wallpaper rolls
- Sizing rolls
- Pasting rolls
- Breaker rolls
- Sweat rolls
- Creping rolls
- Table rolls
- Carrying rolls
- Idler rolls
- Drying rolls
- Couch rolls
- Screen plates
- Slice lips
- Guide bars
- Suction box covers
- Evaporator tubes
- Pump parts
- Drying drums
- Fourdrinier wires
- Shake rails
- Tanks
- Mixing kettles
- Knives

WITH CRODON PLATING

Here's how CRODON (industrial chromium plating) prolongs the life of your paper mill equipment. Application of chromium plate produces an intensely hard, smooth, protective coat on practically all base metals. It resists wear and abrasion. It retards corrosion. It insures more efficient machine performance. Replacement costs are saved. Operating delays are prevented. Improved paper quality is assured.

CRODON plating of your paper mill equipment will be done in the quickest, most efficient, and economical manner possible. When you operate with CRODON-plated machinery, you produce better paper at less cost.

Detailed information will be sent on request, or we shall be glad to discuss CRODON plating with you personally. Call or write the nearest plant.

CRODON
The Chrome Plate

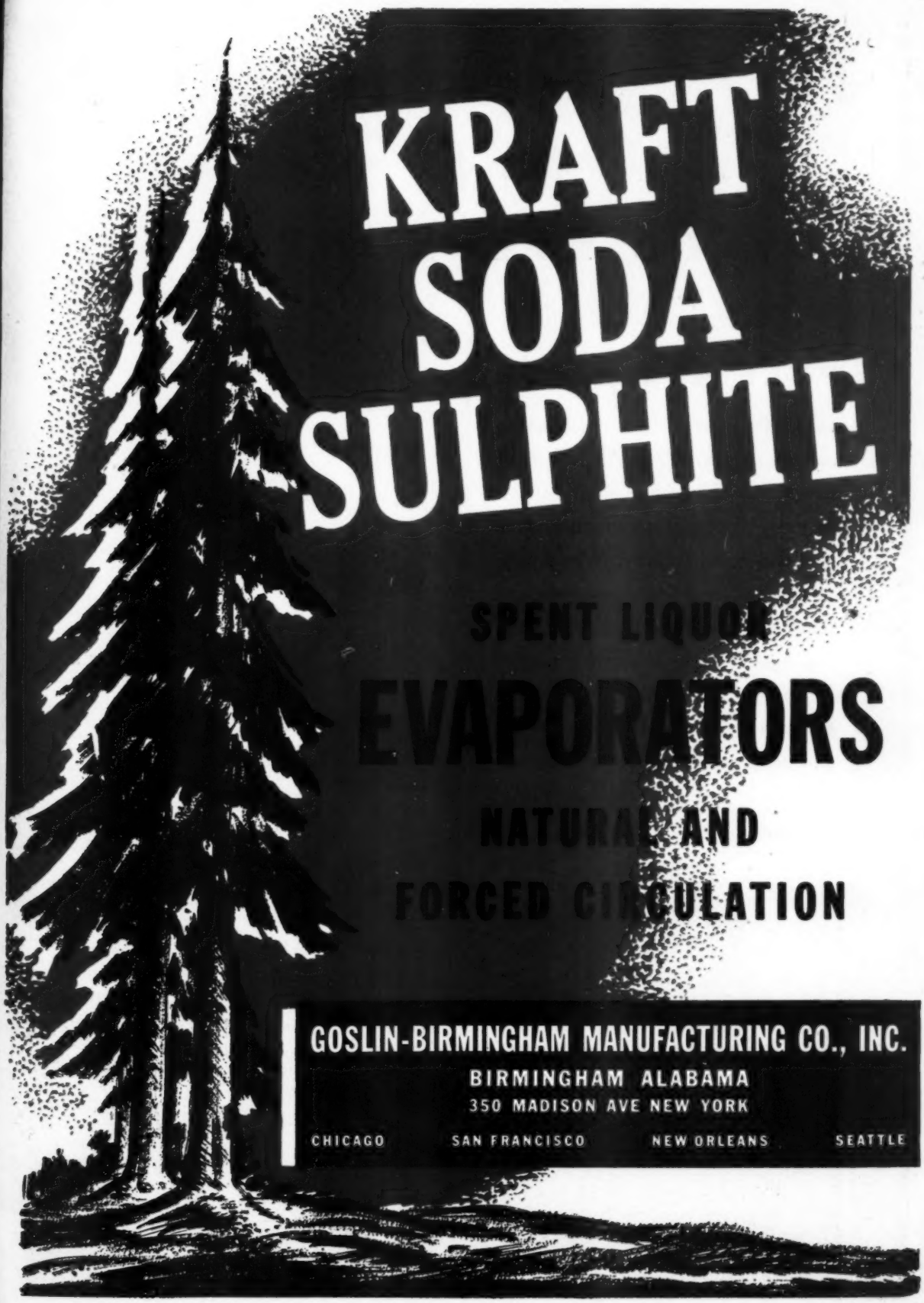
CHROMIUM CORPORATION OF AMERICA

EXECUTIVE OFFICES — 120 BROADWAY, NEW YORK 5, N. Y. — WORTH 2-6720

346 Huntingdon Ave.
Waterbury 90, Conn.
Waterbury 4-3141

1760 Lakeview Road
Cleveland 12, Ohio
Cedar 6660

4645 West Chicago Ave.
Chicago 51, Ill.
Austin 3716


KRAFT
SODA
SULPHITE
SPENT LIQUOR
EVAPORATORS
AND
CULATION
GOSLIN-BIRMINGHAM MANUFACTURING CO., INC.
BIRMINGHAM ALABAMA
350 MADISON AVE NEW YORK
CHICAGO
SAN FRANCISCO
NEW ORLEANS
SEATTLE

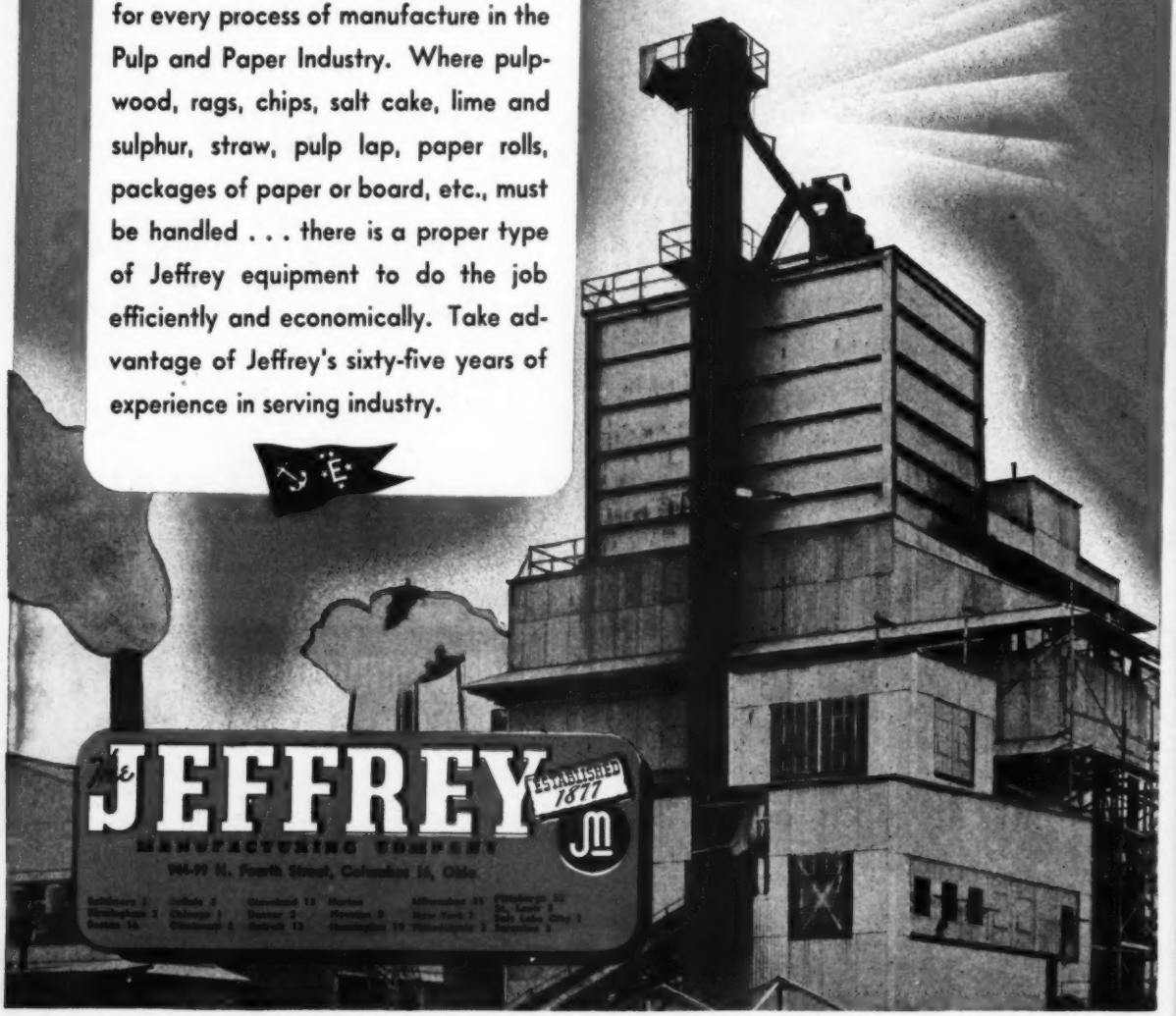
JEFFREY ENGINEERING

For Material Handling

COVERS EVERY INDUSTRY

PULP AND PAPER

The Jeffrey line of material handling equipment is diversified. There is a unit to meet any handling requirement . . . for every process of manufacture in the Pulp and Paper Industry. Where pulpwood, rags, chips, salt cake, lime and sulphur, straw, pulp lap, paper rolls, packages of paper or board, etc., must be handled . . . there is a proper type of Jeffrey equipment to do the job efficiently and economically. Take advantage of Jeffrey's sixty-five years of experience in serving industry.



945

LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . . LUBRICATION ENGINEERING . . .

How to cut lubricant leakage and throw-off . . . safely!!

THE PROBLEM of oil leakage from bearings or gear cases, or oil throw-off from rapidly moving parts such as chains or open gears, recurs regularly in practically every plant. The cure is sometimes very simple, such as installing new seals on bearings or gear cases, or using a heavier grade of oil.

But the problem can be complicated, for example, when parts are hard to get, when shut downs to make repairs on machines are out of the question, or where heavier grades of lubricants do not give proper lubrication. In these cases, Stanodrip has solved the problem for many manufacturers.

Excessively heavy lubricants, while they may stop leakage, usually result in overheating, particularly on high speed bearings. Or they may not circulate in gear cases, thus providing little or no lubrication. Stanodrip stops leakage where a regular oil of approximately the same grade will not. Stanodrip contains special additives which resist the tendency to drip or creep, but do not impair its lubricating quality. Let a Standard Oil Lubrication Engineer help you apply Stanodrip to eliminate unsightly, oil consuming, lubricating jobs in your plant. He will be glad to make a test of Stanodrip with you.

How Stanodrip saves lubricant, maintenance, and production time

Saves 4 hours time of 4 operators each month. In a St. Louis plant every clutch failure on a bomb-nosing machine tied up the machine for four hours, losing the time of four operators and costing $80 for replacements. In spite of the fact that a number of lubricants were tried, clutch faces had to be replaced at least twice a month on each of the three machines. It was about decided that there was no way out of the predicament. Then a Standard Lubrication Engineer suggested a test of Stanodrip because of its ability to stay on the plates and reduce wear. As proof that it did, there have been no clutch failures on the three machines in the first two months' operation.

Write Standard Oil Company (Indiana), 910 South Michigan Avenue, Chicago 80, Illinois, for the Engineer nearest you.

Stanodrip

Buy more War Bonds

STANDARD OIL COMPANY (INDIANA) STANDARD SERVICE

DETROIT PUBLIC LIBRARY

Papermaking in Pace with Progress

A sixteenth-century paper mill. (From "A History of Paper," 1882.) Reproduced from "The Paper World."

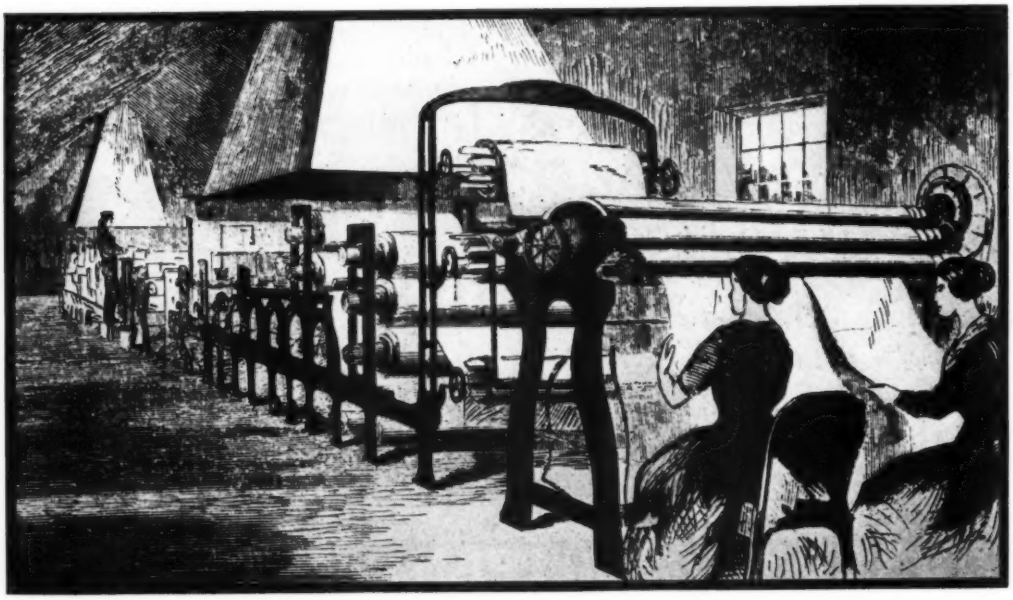
The artist's sketch of fourdrinier machine (below) indicates that in the 1800's women employees were not new in the papermaking industry. This illustration appeared in Ballou's Pictorial Drawing-Room Companion, published June 8, 1855.

The invested capital of the paper and pulp industry—America's sixth largest industry—was 2.88 billion dollars in 1944. The industry employed 147,000 people, and paid wages amounting to 329 million dollars.

The number of man-hours required to make a ton of paper varies with the grade produced—from ten to fourteen hours in the coarse grades, to forty-five hours in writing paper.

In *Papermaking Through Eighteen Centuries* Dard Hunter writes: "The weekly wage of a papermaker in England during the latter part of the fifteenth century was from two to three shillings. When the prices paid for paper at this time are considered, the wage of a workman seems low, but at that time labor did not hold the same important place that it did in later years. During the eighteenth and nineteenth centuries, the selling price of a ream of finished paper would have offset the weekly wage of one papermaker."

Pictured on the opposite page is the newest type of fourdrinier machine which has a daily capacity of from 350 to 400 tons, and will turn out a sheet of paper nearly 250 inches wide.



Trade Winds

Marathon Development at Peninsula (Can.) Scheduled for Completion Next Summer

▶▶▶ ONE OF THE MAJOR individual postwar expansion plans under way in Canada was announced in Toronto early in September by Niles Anderson, vice president of the Marathon Paper Mills of Canada, Ltd.

However, this development was announced to readers of this magazine (1) in November, 1943, and (2) April, 1944. As far back as 1937, Marathon Paper Mills Company, Rothschild, Wisconsin (parent company of the Canadian affiliate), announced the site had been secured and plans were being drawn. (Cf. *Paper World*, Sept. 1937, pp. 10-11). The name of the parent company is now Marathon Corporation.

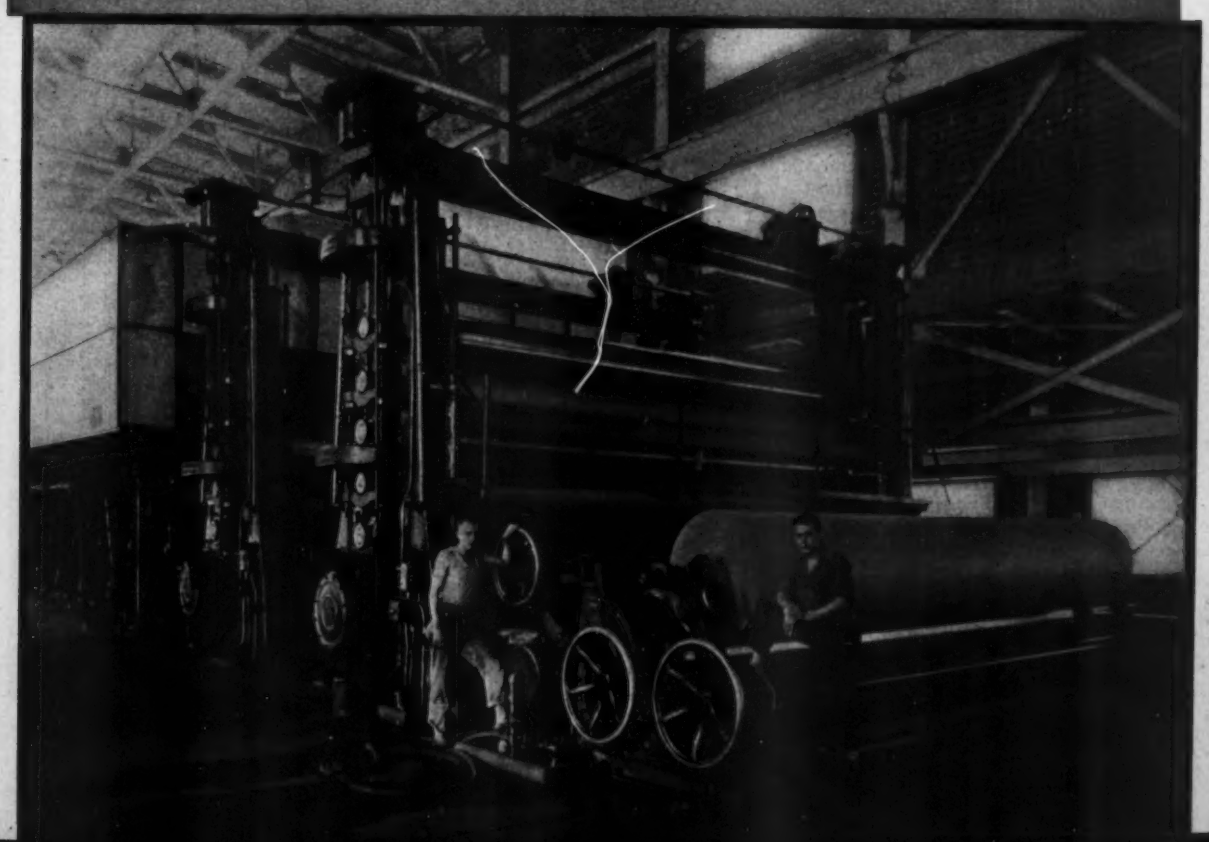
The cost of the new plant which is under construction at Peninsula, on the north shore of Lake Superior, will be at least $15,000,000. Originally, plans called for construction of a mill of 200 tons per day capacity at a cost of about $10,000,000 and a townsite to cost $1,500,000. In his announcement, Mr. Anderson states that "The new mill which we hope to have in production by June, 1946, will be a 300-ton enterprise, while the townsite will be doubled at a cost of $3,000,000." The mill, with the woods department is expected to employ 1,500 men.

Modified agreement between the company and the provincial Department of Lands and Forests are said to have already been approved. "The negotiations with the Marathon Company cover one phase of the plan for wise use of Ontario's forests," said Lands and Forests Minister W. G. Thomson. "I am highly gratified to see the plan is developing so smoothly."

The $15,000,000 project includes a bleached kraft mill, the new town, a dock 1,300 feet long by 450 feet wide. Included in the town now being built will be a modern hospital, bank, postoffice, general store, theatre and other recreational facilities, dry cleaning and laundry plant, hotel and modern homes. Much of the construction work has already been completed. Government approval for the construction had been received before the war ended, said Mr. Anderson, "and we're going ahead at top speed now."

The company has sufficient timber limits to furnish the wood for the mill on a continuous basis. According to Mr. Anderson, "These limits constitute what is known as the Pic

A Modern Fourdrinier Paper Machine.



River watershed. Virtually all the wood will be driven down the Pic and its tributaries to Lake Superior. It will then be towed in booms of about 8,000 cords each to Peninsula harbor, about 12 miles. Different species on the limits are approximately as follows: spruce 55 per cent, jack pine 30 per cent, and hardwoods 15 percent. The percentage of balsam is small. All coniferous woods are of very fine and strong fiber due to slow growth brought about by the long cold winters. This wood is recognized as the best in the world for the manufacture of highest grades of chemical pulps."

Peninsula harbor, on which the mill and townsite are situated, is one of the most protected harbors on the north shore of the Lake and lends itself to excellent berthing of lake steamers of any size. Raw materials such as coal, oil, etc., will be shipped in by boat during open season and most of the pulp will go to lake state ports by water. The site was chosen after weighing all factors of low cost freight, nearness to wood supply and the purest of waters.

Nearby is the townsite, to be known as Marathon. The town, which will be leased by a separate corporation which will manage its affairs and administer its various utilities, provides the most modern family accommodation, including apartments, with schools. The townsite and mill have full fire protection, being provided with large water mains, hydrants and sprinklers in the main buildings, in addition to automotive fire-fighting equipment. The hotel, already in operation and named the Everest in honor of D. C. Everest, president of the company, has 30 large bedrooms, some with bath. It has a beauty parlor, barber shop, tavern, cafeteria and dining room. The kitchen has the latest sanitary and efficient equipment, including electric dishwasher, automatically controlled bake oven and refrigeration.

The town and mill are adjacent to the trans-Canada main line of the Canadian Pacific Railway and is 185 miles from Port Arthur and Fort William. The trans-Canada highway can be reached by a stretch of good road two miles from the town.

Among the buildings now being erected is a modern laboratory with a constant humidity and temperature room for testing pulp. The laboratory is being designed for the most efficient control of even dissolving pulps if necessary; but the primary purpose of the organization for the present is to supply paper pulp to the plant of the Marathon Corporation at Rothschild, Wisconsin.

WARD PAPER MILL HAS RADIANT HEATING SYSTEM IN OFFICE BUILDING

Installation of a radiant heating system in the offices of the Ward Paper Mill, Merrill, Wisconsin, marks the first use of this type of heating system in the paper industry. And, despite one of the coldest winters in north central Wisconsin last year, it was reported that the new system passed its test with honors.

Radiant heating, a system which now is installed in more than a thousand homes, offices, public buildings and plants throughout this country, is based upon a revolutionary manner of distributing heat, not upon the way heat is produced.

When Ward's management decided to construct a much-needed addition to the office building just before the start of last year's heating season, considerable study was made of this new type of building heating.

Originally, it was planned just to install radiant heating only in the new addition. However, later it was decided that the system should be extended to include the entire office building.

Ward's own employees designed the addition and performed practically all the work in the building of it. For the walls, concrete blocks were used. Starting the foundation, employees first cleared the site and then laid 18 inches of cinders, topping these with 12 inches of clean sand.

For the radiant heating installation, sinuous coils of 1¼ inch wrought iron pipe were laid on ordinary concrete reinforcing rods which were tied into sills around the inner face of the foundation. Also supporting the heating pipe were small concrete piers at regular intervals in the area of the fill.

With ingenuity prompted by progressiveness, Ward's employees arranged a jib to bend and weld the pipe coils in their own millwright shop. When the pipe was set in place, five inches of concrete were poured to cover both pipe and fill. This concrete also formed the flooring for the new offices.

A small convertor was hooked up with the steam boiler to provide hot water for the coils of the radiant heating system, and an ordinary wall thermostat regulates the temperature of the rooms.

With the new type of heating system being entirely concealed—one of the many advantages of the radiant heating system—ample space was provided for eight girls, two private offices, a conference room, file cabinets and a vault. The new addition contains approximately 2,500 square feet of floor space.

Last January, a cold wave swept over north central Wisconsin and the temperature in Merrill plummeted to 29 degrees below zero. For seven days the mercury fluctuated between 12 and 29 degrees below. During this rugged weather, it is reported, the thermostat setting in Ward's office was not changed and the temperature of the boiler water was not increased even one degree.

It was asserted by the plant's engineer that, in his opinion, 60 per cent less units of steam were supplied from the boiler to the convertor for the radiant heating system than were supplied through the lines the previous year to the heating system in the old office; this, despite the fact, that the

Ward Paper Company's new office building which incorporates one of the latest innovations in heating systems

PAPER · · · America's 6th Industry

COAL IN A PAPER PACKAGE

(NEWS ITEM: *Paper packaged fuel is doing away with the coal bin and its attendant dirt.*)

A new household fuel product, made of compressed anthracite and bituminous fines, is now being packaged in sturdy Kraft paper. Hitherto unusable because of its size, this new product possesses high fuel value. Packages are fed directly to the furnace, paper wrapper and all. Housewives will welcome this easy method of tending a furnace and the elimination of dirt that accompanies the coal bin.

Fibre cans for frozen foods . . . Paper cartons for light bulbs . . . Laminated paperboard for hot-air ducts . . . Paper bags for chemical fertilizers . . . New uses for paper, calling for new standards of lightness and toughness, new standards of quality in performance. New responsibilities — new opportunities for the Pulp and Paper Industry.

The Puseyjones Organization is now devoting itself completely to the design and construction of Paper-Making Machinery built to new high standards of speed and efficiency, and to the modernization of existing machines.

The Puseyjones Research and Development Committee, formed within this Organization to help in our service to America at War, now shares with the Paper Industry many of the lessons learned in the use of new materials and new techniques — and which are now so co-ordinated as to be of practical, workable value.

Our engineers are on call to survey your requirements.

A New Bulletin — "The Improved Puseyjones Steam Joint" is now available. Also a descriptive pamphlet on the improved Stream Flow Vat System . . . Yours on request.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U. S. A.

LEFT—Despite frigid outdoor temperatures, concealed radiant heating of the Ward Paper Company's offices (installed under the concrete floor) provides comfortable atmosphere for the employees. RIGHT—The radiant heating installation in Ward's new office building was built by the employees. Shown here are employees at work, spreading freshly poured concrete over wrought iron pipe coils. The mill's boiler provides steam which is converted into hot water for this heating system.

new addition had been built increasing the over-all size of the offices about 33 per cent.

An example of the even distribution of heat through the radiant heating system is the fact that thermometers installed in the Ward offices registered exactly the same temperatures as the dial settings on the thermostats. This uniformity of temperature was maintained with a water temperature of 110 degrees.

Advantages of radiant heating are said to be: With all heating coils being completely concealed, more complete use of floor space is provided. Floors themselves are warmer with cold air currents being materially reduced. Greater personal comfort is afforded with lower air temperatures. Cleanliness results from a minimum of air currents.

◆

RESTRICTIONS ON PAPER RELAXED, BUT PRICE CONTROLS STILL REMAIN

The paper industry is back on its own feet as far as operations are concerned but there is no hint that price controls will be abandoned. Newsprint supply is more in the news than problems of other grades with shortages still apparent, but with some relaxation of tonnage restrictions.

The Boren subcommittee of the House of Representatives has recommended that all restrictions on usage be removed December 31. The committee says that while there is certain to be dislocation, newsprint manufacturers and publishers should be enabled to make their plans for an orderly transition to peacetime free enterprise.

The newsprint control order was materially relaxed as of October 1. The Forest Products Bureau of the WPB does not anticipate any appreciable increase in the amount of available newsprint before May 1.

◆

REMOVE RESTRICTIONS ON IDLE PAPER MACHINES

To insure a maximum production of paper and paperboard, especially during the period of reconversion, restrictions on the use of idle paper machines have been removed by the War Production Board.

This was effected by an amendment to paper and paperboard conservation order (M-241), which has not been revoked but amended to conform with today's changed conditions, officials of WPB's Paper Division pointed out.

Current paper requirements of the military and governmental bureaus make it necessary to retain the existing reserve production requirements of Order M-241 in the rag-content paper field. Mills producing these grades of paper must continue to maintain a reserve production of 35 per cent of each mill's monthly production to insure adequate tonnage of these papers for Government use. Included in this field are a considerable number of bond, currency writing, manifold and index grades of paper.

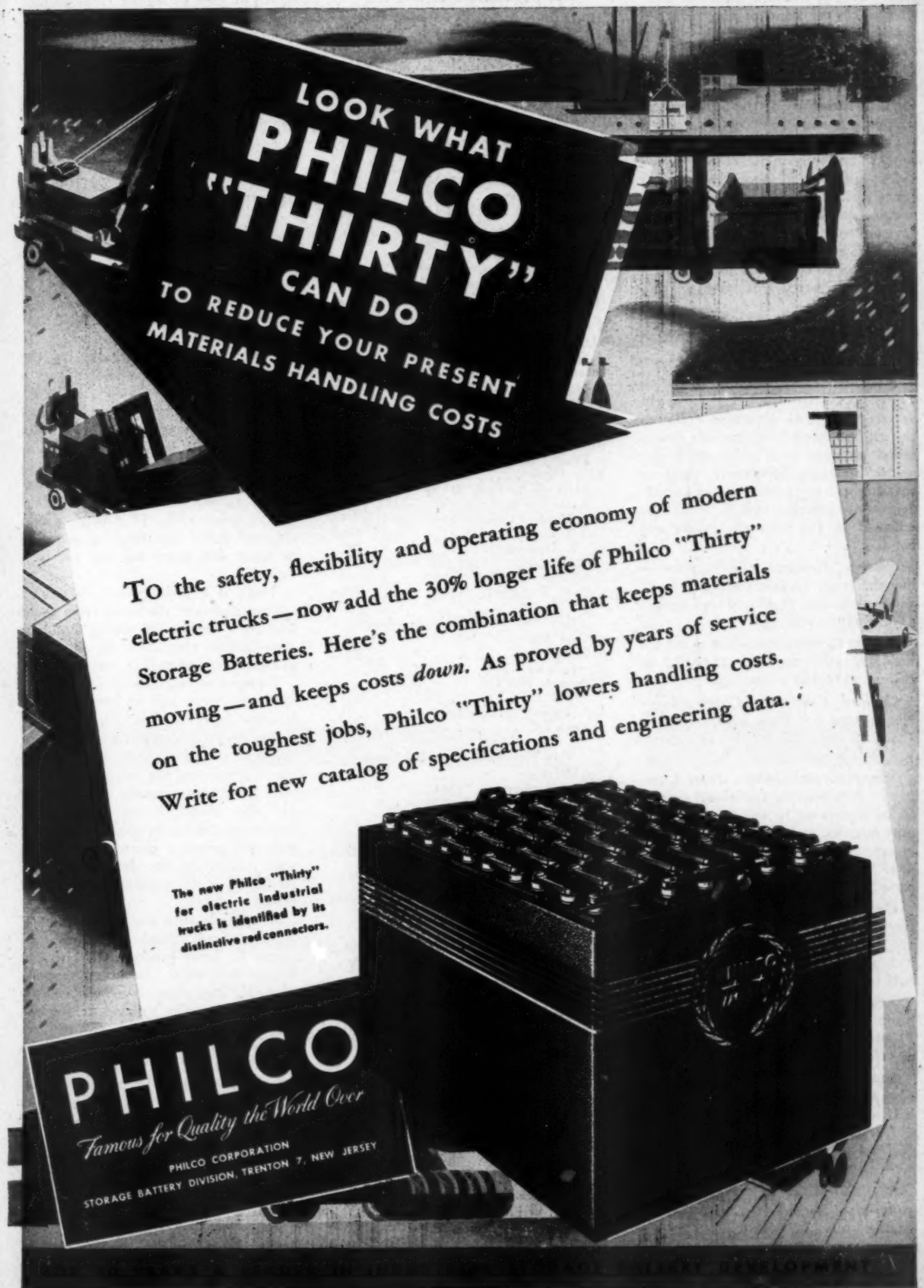
Although the war is over, the Army, Navy and certain Federal agencies still require large quantities of several types of paper.

Men in the services still require what are called "household papers," including toilet tissue and towels, as well as books, magazines and newspapers. Although many military packaging and shipping requirements have been materially reduced because ordnance and ammunition no longer have to be shipped, the soldiers and sailors have to be fed and maintained, and food packaging is still a major paper and paperboard requirement.

To take care of these demands, Order M-241 now requires that each

AN EXPLANATION!

▶▶▶ The appearance and content of this issue have been altered so that we may serve our readers and advertisers without any further interruption. The strike which tied up Chicago commercial printing houses for three weeks caused an unavoidable delay in the mailing of the September issue as well as slowing down production of the October issue. For the sake of expediency, this issue of THE PAPER INDUSTRY AND PAPER WORLD comes to you with some changes. However, the labor situation has been adjusted, and we expect to give you future issues with the same content and having the same appearance as before. . FRITZ PUBLICATIONS, INC.


LOOK WHAT
PHILCO
"THIRTY"
CAN DO
TO REDUCE YOUR PRESENT
MATERIALS HANDLING COSTS
To the safety, flexibility and operating economy of modern electric trucks—now add the 30% longer life of Philco "Thirty" Storage Batteries. Here's the combination that keeps materials moving—and keeps costs *down*. As proved by years of service on the toughest jobs, Philco "Thirty" lowers handling costs. Write for new catalog of specifications and engineering data.
The new Philco "Thirty" for electric industrial trucks is identified by its distinctive red connectors.
PHILCO
Famous for Quality the World Over
PHILCO CORPORATION
STORAGE BATTERY DIVISION, TRENTON 7, NEW JERSEY

paper and paperboard manufacturer reserve 20 per cent of his monthly production of all types of paper other than the rag content fine papers. This 20 per cent reserve replaces the figure of 35 per cent, which was formerly applicable to many of the printing and wrapping grades of paper.

Other amendments impose inventory controls formerly included in the provisions of several recently revoked quota restriction orders.

Another amendment removes the 10 days advance notice of changes in required reserve production percentages which may be called for now by WPB if found necessary without a waiting period.

◆

FINANCIAL

With securities markets rising to points previously untouched for eight years, paper mill securities followed the general trend. Nationwide strikes failed to serve as a moderating element, investors apparently thinking that higher wages will mean a certain degree of inflation which would be reflected in the value of stocks and bonds.

Crown-Zellerbach Corporation — For the three months ending July 31 net income was $1,878,221 as against $1,713,300 a year ago.

Eastern Corporation—Net profit for the first half year was $242,012 as against $250,918 a year ago.

Gaylord Container Corporation—Net income for three months ending June 30 was $251,983, as against $253,821 a year ago.

Minnesota and Ontario Paper Company—Net income for three months ended September 30 was $460,484; for nine months, ended September 30, net income was $989,780, compared to $947,928 for the same nine-month period in 1944.

Oxford Paper Company—Earnings for the second quarter of 1945 were $231,204 and for the half year $444,915 as against $429,311 in the first half of 1944.

Paraffine Companies, Inc. — Net profit for the first half of 1945 was $1,948,481 as compared wtih $2,015,604 for the same period in 1944.

Southern Advance Bag & Paper Company—Net income for the first half of the year was $224,303.

United States Envelope Company—Net earnings for the first half year were $483,954.

West Virginia Pulp & Paper Company—Net income for nine months ending July 31 was $1,763,215 as against $1,747,100 for the same period a year ago.

New York Stock Exchange—Stocks

	Closing Prices Sept. 25	Aug. 27
A.P.W. Products ..	7½	6½
Celotex	19⅛	18
Same Preferred..	21½	21¼
Certain-teed Prod..	15⅜	12⅞
Same Preferred..	*110-114	166
Champion P&F Co.	42½	38
Same Preferred..	...	...
Container Corp. ..	33¼	29¾
Cont. Diamond ..	*13½-13¾	13⅜
Crown Zellerbach..	25¾	25
Same Preferred..	103⅛	102¾
Dixie Vortex ...	*34¼-34¾	29⅛
Same "A"	48	48
Robert Gair	7⅞	6⅞
Same Preferred..	*18¼	18⅛
Gaylord Container.	*28½-29	27½
Same Preferred..	*63-65	*59-60½
International Paper.	32⅞	28¾
Same Preferred..	101⅞	98
Kimberly-Clark	53½	49¾
McAndrews & Forbes	*34-34¾	*32⅞-33¼
Mead Corp.	*18⅛-18½	17⅞
Same Preferred..	*106-108	*102-103½
National Container.	18¾	13½
Paraffine Cos	*70-73	*67¼-70
Same Pref.	*107¾-109½	*109½-110½
Rayonier, Inc.	21⅞	21
Same Preferred..	36⅛	37
Scott Paper	*53½-54	*55-56
Same 4½% Pref.	111¼	*111-112
Same 4% Pref...	114	112
Sutherland Paper..	*38-40	*34½-35½
Union Bag & Paper	21	20⅜
U. S. Gypsum....	102	96½
Same Pref. ...	*192-193	*190¼-192¾
West Va. P&P Co..	32¾	30
Same Preferred..	*110⅛	110½

New York Stock Exchange—Bonds

Abitibi 5%	...	...
Celotex 3¾%	...	...
Certain-teed 5½%.	...	...
Champion P&F Co. 4¾%	...	...
Intl. Paper 5%....	104	...
Same 6%	...	...

New York Curb Exchange—Stocks

Am. Writing	...	8½
Great Northern ...	38¾	...
Hummel Ross	10⅜	9
St. Regis	8	8
Taggart	7	6⅝
United Wall Paper	7⅞	5½

*Closing Bid and Asked Prices.

◆

MORE EXTENSIVE METHODS OF OPERATION STUDIED BY B. C. PULP AND PAPER CO.

Proposals for further refinements in operational methods are being studied by the British Columbia Pulp and Paper Company, and on the data furnished by such study rests the decision as to possible future developments.

The company was engaged in an extensive program of expansion, with an expenditure of approximately $2,000,000 at its Woodfibre and Port Alice plants, just prior to and following the outbreak of the war; but due to scarcity of labor and material shortages, it was unable to take the fullest advantage of increased capacity. With return of men to regular employment, the company's plants are now being brought up to a maximum output.

At present twenty new houses are being completed at the Port Alice plant, and a concrete storage bin is also under construction there, at a cost of $80,000, to replace the one recently destroyed by fire.

◆

BRITISH PAPER TRADE NOTES

Although no radical change has come over the British paper trade a very slight easing of the situation has been noted. The subject of labor is still predominant and the present rate of demobilization does not hold out any immediate hope of real relief. It is, however, expected that with the conclusion of the Far Eastern war a gradual improvement may operate. As dependent trades are in a similar position the call upon paper production is not nearly so heavy as it might be particularly as a measure of relief will now operate through government demands falling off and the fact that the notorious No. 48 Order, which clamped down the usage of paper in so many directions, has not yet been canceled.

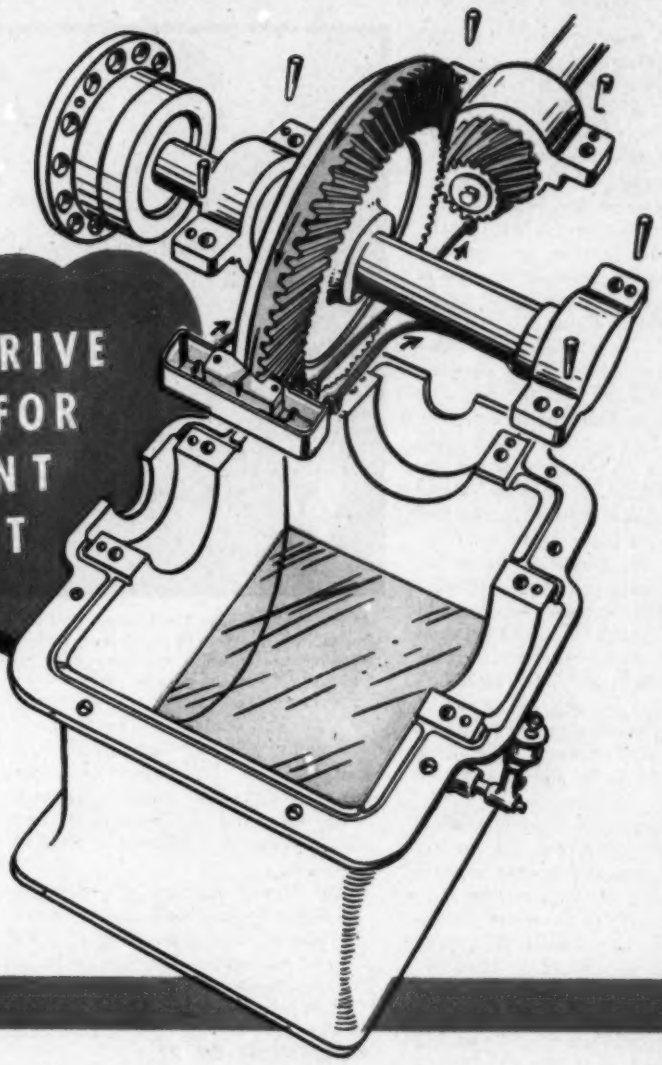
There is a feeling that too much contemplation of the heavy tasks ahead lead to a decline in energy and the most healthy attitude is the optimistic grappling of immediate worries.

Printers are still many months behind with work and are turning down business in every direction. But the Government has appreciated the importance of printing in postwar reconstruction and the rebuilding of export trade, consequently this industry has been placed on the priority list. The return of key workers to printing soon will create a greater demand for paper, thus aid the demand for the return of more workers to the paper industry.

Meanwhile with the receipt of pulp supplies from Sweden a slight increase in paper production, with existing manpower, has been accomplished. But there is as yet no improvement in the position of the national newspapers which are still restricted to four pages. As the British paper trade still has to depend largely upon home produced materials, considerable concern is felt over the heavy decline in the collection of wastepaper. Happily the esparto mills, although not having the advantage of a return to esparto grass importation, are receiving a steady supply of straw in its place.

Quite recently the price of these latter papers was increased by the No. 68 Order together with sulphites

DOWELED DRIVE BEARINGS FOR PERMANENT ALIGNMENT



A sixty-second glance at the cutaway drawing of a Black-Clawson drive will show you plenty.

FIRST . . notice that Black-Clawson bearings are assembled on the shaft . . . then properly aligned in the lower case . . . then actually doweled in place.

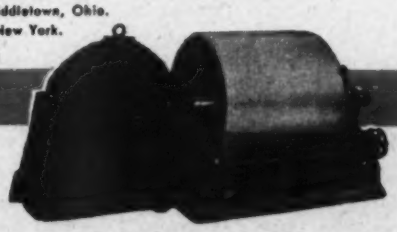
SECOND . . notice an injury-proof oiling system lubricates each bearing.

We recognize that this construction is simplicity itself. Yet this very simplicity means that gears are properly meshed with no chance of misalignment . . . that there are no external screws to collect dust or to invite tampering . . . that oil starved bearings are a thing of the past.

Ask us to show you the many other Black-Clawson drive features.

THE BLACK-CLAWSON COMPANY, Hamilton, Ohio

DIVISIONS: Shartle Bros. Machine Co., Middletown, Ohio.
Dilts Machine Works, Fulton, New York.
Associate: Alexander Fleck Limited, Ottawa, Canada



and cylinder coated papers (Massey Process). Maximum prices for imported papers are also fixed on a C.I.F. basis. Concurrently with the above coated stocks (which are not controlled) were also advanced in price.

Another Order, which stresses the urgency of export build-up, has released the restriction placed on the production of samples of posters, diaries and similar articles for export.

Conversely, the reopening of trade with Norway and Finland is featured in the press. Trygve Lie, the Norwegian Foreign Minister, is reported to have paid a recent visit to this country and it is understood that the export of wood pulp and finished paper to Britain was discussed. Norway, by recent reports, is in a fairly happy position as regards finished paper and paper products; paper being used extensively in the place of linen for tablecloths, sheets and similar articles.

While standardization of paper and board is still being discussed between printers and paper merchants, wide publicity has been given to the results of the nation-wide poll on standardization which was conducted by Bulkley, Dunton & Company, New York (Cf. P. I. and P. W., July, 1945, p. 562).

A startling insight into the decline of the British paper trade on the re-export side is provided by the recently published Board of Trade returns covering the years 1938 to 1944. While the total for 1938 stood at 23,696 cwt. (valued at £69,245) 1939 reduced this to 15,346 cwts., the next year to 8,656 cwt., 1941 to 3,541 cwt., 1942 to 827 cwt., 1943 to 982 cwt. and 1944 to 1 cwt. (it would be interesting to know what this one cwt. was).

Paper and Board imports which in 1938 reached 1,128,677 tons (2,240 lb.) declined to 199,435 tons in 1944 and the imports of materials fell from 96,287 tons in 1938 to 18,811 tons in 1944.

◆

AMER. WRITING PAPER CORP. HOLDS ANNUAL MEETING OF FIELD REPR.

The annual sales meeting of the American Writing Paper Corporation was held at the home offices in Holyoke, Massachusetts, from October 1 to October 5, 1945. Field representatives from all over the country, and corporation executives convened to put into operation postwar plans which have been further stimulated by the lifting of wartime government restrictions on paper manufacture.

In an address by the vice president in charge of sales, James H. Sweet, who conducted the meeting, emphasis was placed on the company's expanding facilities for meeting postwar competition and the growing demand for nationally advertised Eagle-A papers.

Advertising, marketing, production and research plans were also reviewed.

(*Leon M. Yoerg, president of AWP for the past eight years, has resigned. See "Personals."*)

At the Eagle A Sales Conference, held by American Writing Paper Corporation were: Front row (L. to R.)—H. S. Greason, New York; R. L. Day, Boston; and F. W. Hastings, Philadelphia, all AWP branch office managers. Back row—G. G. Olson, Chicago office manager; J. H. Sweet, of Holyoke, vice president in charge of sales; and R. H. Burnett, Chicago sales representative

◆

RETIREMENT OF 27 EMPLOYEES AT W. VA. PULP & PAPER COMPANY

Twenty-seven West Virginia Pulp & Paper Company employees, with an aggregate service of more than 1,058 years, retired on October 1, 1945.

Among those from the New York office is Henry F. Harrison who had been with the company for more than fifty-four years and served as vice president since 1941. Mr. Harrison has been active in many associations of the paper industry and will continue to serve as a director of the company.

◆

NATIONAL GYPSUM LEASES SONOCO MILL IN S. C.

National Gypsum Company, of Buffalo, New York, has added another paper mill to its holdings in leasing a paper mill and other property at Garwood, New Jersey, from the Sonoco Products Company, Hartsville, South Carolina.

Full control will be assumed by National Gypsum on January 1, 1946, and production of paperboard for the company's own use will begin on that date. The company's other mill is located in Newburgh, New York.

◆

WATCHES PRESENTED TO MEMBERS OF CENTRAL PAPER COMPANY'S 25-YR. CLUB

At a banquet held in the recreation rooms of Central Paper Company's main office in Muskegon, Michigan, thirty-two members of the Quarter Century Club were presented with gold watches by the company's president, Charles Smith.

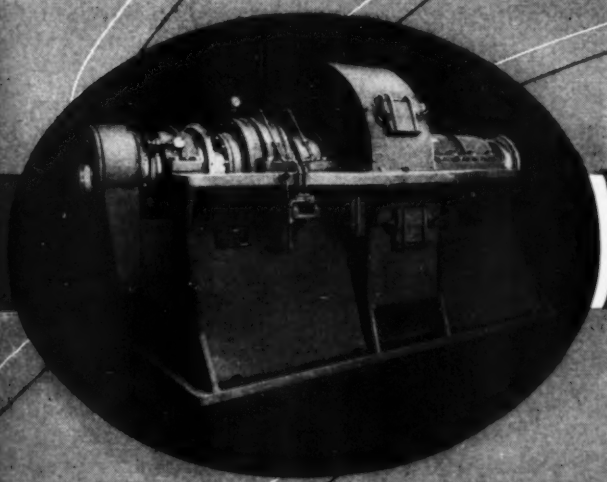
The service records of the thirty-two members ranged from twenty-six to forty-five years, with an amazing total of one thousand and sixty-nine years—a record that speaks well for both employees and employer.

◆

WHERE WAS INVASION PAPER MONEY MADE? NOW IT CAN BE TOLD

One of the most interesting stories of World War II, which can now be told, concerns the manufacture of paper for United States invasion money for American troops when they landed. first in North Africa in November, 1942, next in Sicily and Italy, then in France after Normandy D-Day, and finally in Germany. The paper for the Japanese invasion money was not ordered until early last summer, but it was ready by the time General Mac-

CONTINUOUS BEATING AND REFINING FOR EVERY PAPER MAKING FIBER by SUTHERLAND



SUTHERLAND REFINER CORPORATION . . . TRENTON, N. J.

SUTHERLAND REFINER LIMITED . . . . . MONTREAL, QUE.

Arthur reached Tokyo, although the occupation of Japan was pushed ahead of schedule by the collapse of the enemy.

This most important work was carried out by two Holyoke (Mass.) firms, the Parsons Paper Company and the Carew Manufacturing Company; and while they, of necessity, knew many weeks in advance where Allied might would next strike, they guarded their secret well and to the credit of everyone associated with these mills, there never was a hint from them as to the future moves of the armed forces.

These mills are now working on new currency for the liberated countries which, in an effort to foil the Nazi collaborators who had hoarded large sums of money during their occupation, are anxious to call in their old currency and issue new paper.

◆

HAMMERMILL RESUMES ITS ANNUAL SALES CONFERENCES

Discontinued since 1942 on account of wartime conditions, the Hammermill Paper Company again held its annual sales conference of Hammermill agents—the thirty-second—at Erie, Pennsylvania, October 2-4 (*See illustration below*).

The company's plans for mill expansion which were interrupted by the war, are now being carried forward as fast as new equipment becomes available. This announcement, given to the meeting by Donald S. Leslie, first vice president and general manager, and the question "Where do we go from here?" presented by Norman W. Wilson, company president, formed the keynote of the meeting this year. The business sessions of the conference, presided over by Mr. Wilson, were given over largely to sales and advertising plans for the immediate and more distant future.

Present at the conference was Bruce Barton, well known representative of the firm of Batten, Barton, Durstine and Osborn, the company's advertising counselors. Mr. Barton predicted that, on the basis of present advertising activity, 1946 should be a large and successful year.

Other speakers were Harrison R. Baldwin, vice president in charge of sales, who reviewed sales curves during the war and the prospects for the future, and A. Ellis Frampton, advertising manager and assistant general sales manager. Mr. Frampton showed the new Hammermill sound motion picture of papermaking, "The Gift of Ts'ai Lun—Paper."

The business sessions of the conference were held at the Kahkwa Club in Erie on October 3 and 4. Nearly every domestic Hammermill Agent was represented, and several attended from foreign countries.

◆

MASONITE TO EXPAND LAUREL (MISS.) PLANT

To meet the increased postwar demand for Masonite Products, the board of directors of the Masonite Corporation has approved an expenditure of over a million dollars for expanding the facilities of its plant at Laurel, Mississippi. When completed, it is claimed the new facilities will increase production of Masonite Pressedwoods by more than 30 per cent.

The financing of this expansion was begun more than a year ago with the sale of 62,000 shares of Masonite common stock, the proceeds being placed in escrow for this one purpose.

◆

TIME INC. ACQUIRES PLANT OF THE MAINE SEABOARD PAPER CO.

Reports of the impending sale of the Maine Seaboard Paper Company, Bucksport, Maine, climaxed on October 25 with final negotiations for the acquisition of that company by Time Incorporated.

The Maine Seaboard Company has been operating on newsprint and has contracts for the delivery of a major portion of its capacity through the next year or two. However, since Time Incorporated has acquired this property, with its more than 600 square miles of timberland, as a source of additional paper for *Time* and *Life*, a substantial improvement program will be developed and carried out as circumstances permit. The mill, which was built in 1930 is an integrated mill. The paper mill has a daily capacity of 700,000 pounds; the pulp mill produces 200,000 pounds of unbleached sulphite fiber each day.

The transfer of the paper and pulp mill property was part of a transaction involving the sale of all of the industrial properties of New England Industries, Inc. Prior to the final action by the U. S. District Court for the District of Maine, an order of the SEC directing the sale was issued.

Time Incorporated has purchased substantially all of its paper heretofore under long-term contracts with leading paper manufacturers. In accordance with this policy, it may be anticipated that one of these manufacturers would become associated with Time Inc. in the further development of this mill to higher grades of paper.

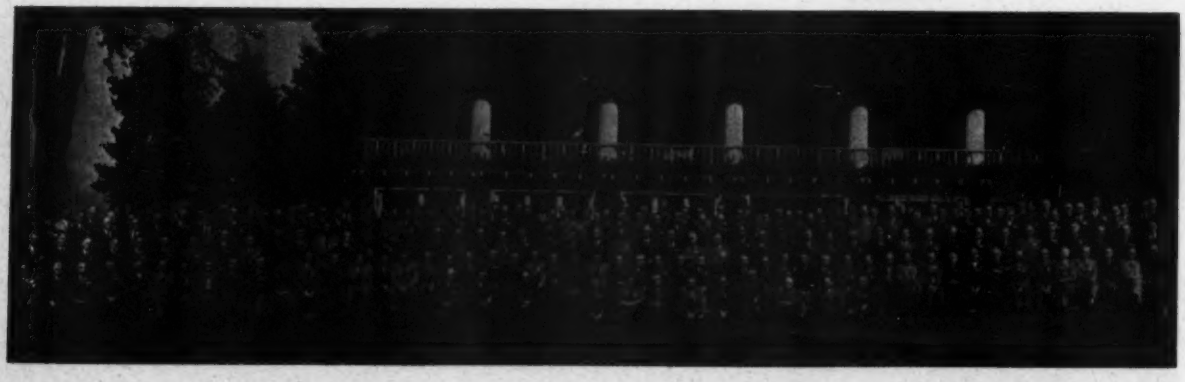
◆

SORG PULP CO., LTD. PLANS EXPANSION AT PORT MELLON—$750,000

In order to increase production of kraft pulp over its present output of 100 tons per day, the Sorg Pulp Company, Ltd., will spend $750,000 in the next eighteen months in expansion of its Port Mellon (B. C.) plant.

Major improvements planned are a modern chemical recovery plant and a new pulp washing system. The latter is expected to be installed and in operation by early spring.

In addition to the above expansion, the company is now completing new yard storage facilities, new water system, provision of new docks and shipping facilities, improvement to the booming grounds, additions to the Port Mellon townsite, and the installation of lumber handling equipment.



Among the things that Mr. and Mrs. Consumer may look forward to will be new surprises in frozen foods. For new ways have been found to capture and hold that garden-fresh flavor of vegetables and fruits—and the unique savour of meats and fish. But one of the most interesting of the surprises will be the packages in which these foods will come. Look at the inner wrapper. Now ... it is "high wet-strength" paper—paper that is extra strong when dry and will not lose its strength and fall apart even when soaking wet! Thus it gives a new measure of protection to foods ... new convenience to the user ... a real selling feature for the producer and retailer ... *and a new profitable specialty for paper-makers!*

"High wet-strength" paper, which is also "wet-rub resistant", is now made by the use of a special synthetic resin developed in the Cyanamid Research Laboratories. Called PAREZ** 607 this resin imparts improved wet-and-dry strength to any type of paper, from paper-board to fine tissue, simply by adding the resin prepared under Cyanamid's patents in the regular paper manufacturing process. As a result, paper is today doing many of its old jobs better and also many entirely new jobs. Cyanamid's Paper Technicians are prepared to work with paper manufacturers interested in the proven potentialities of PAREZ to make paper do many of its old jobs better and find new fields of usefulness in serving your product and packaging paper needs.

WAR-PROVEN USES...

Maps and Charts
Export Cartons
Blue Print Papers
Carton, Crate & Barrel Liners
Multi-Wall Bags
Lens Wiping Materials

TIMELY PEACE-TIME PRODUCT IDEAS...

Shopping Bags
Ice Cream Containers
Kleenex and Paper Towels
Frozen Foods
Shipping Labels & Tags
Twisting Papers
Coating Raw Stocks

*Reg. U. S. Pat. Off.

**Trade-mark of American Cyanamid and Chemical Corporation applied to its synthetic resins for use by the paper industry. The processes under which PAREZ is applied in the production of wet-strength paper are covered by U. S. Patents Nos. 2,291,079; 2,291,080 and 2,345,543 and U. S. Patent Application Serial No. 435,032.

American CYANAMID *& Chemical Corporation*

(A Unit of American Cyanamid Company)

30 ROCKEFELLER PLAZA · NEW YORK 20, N. Y.

DISTRICT OFFICES: Boston, Mass.; Philadelphia, Pa.; Baltimore, Md.; Charlotte, N. C.; Cleveland, Ohio; Chicago, Ill.; Kalamazoo, Mich.; Detroit, Mich.; St. Louis, Mo.; Azusa, Calif.; Seattle, Wash. In Canada: Dillons Chemical Company, Ltd., Montreal and Toronto.

HARRISON ELLIOTT'S HANDMADE PAPER MILL FILMED BY UNIVERSAL

Soon to be released to the motion picture theatres throughout the country, is Universal's featurette titled "Paper Magic," which shows the making of handmade paper by Harrison Elliott, advertising manager of the Stevens-Nelson Paper Corporation of New York, and the only craftsman in the United States producing such paper in sufficient quantities and variety to make it a small one-man industry.

Mr. Elliott uses cotton or linen rags for his paper, a castoff GI shirt, linen from knickers, or pajamas and sunsuits will do, and as the rags are not bleached, the color and fiber effects of the finished product depend on the color of the rags used.

The rags are first cut into small pieces, mixed with water in a beater, and then reduced to a pulp by a bladed cylinder. No chemicals are used. The simple mechanical process converts the pulpy mass into a liquid fibrous state which then goes to the vat with just enough water added to give the proper consistency for casting into sheets by the hand mould.

Here Mr. Elliott demonstrates the delicate manipulation and balance of the moulds needed to turn the mass of fibers into a sheet of solid and even texture, and how while still liquid the fibers are intertwined and interlocked into a sheet that when pressed and dried will present a substantial surface suitable for writing and printing purposes.

(Mr. Elliott's handmade paper mill was described by him in an article, "Hand Papermaking in Occupational Therapy," P.I. and P.W., February, 1945, p. 1413.)

◆

WORK ON NEW FILTRATION PLANT AT MANDO HAS BEGUN

As part of the company's $6,000,000 expansion and modernization program (Cf. P. I. and P. W., Aug., 1945, p. 658), Minnesota and Ontario Paper Company has begun work on a filtration plant at International Falls, Minnesota. The plant will have an initial capactiy of 15,000,000 gallons per day, and provisions are made for in-

(Turn to page 1008)

In Universal's film, "Paper Magic," Harrison Elliott demonstrates (left) the use of ordinary paper cutter to shred rags in manufacturing handmade paper, and (right) first step in the making of handmade paper.

LEFT—This scene from the film, "Paper Magic," shows how pulp is formed on a mould. RIGHT—This scene shows the end product of handmade paper.

HANDLING + Processing + HANDLING + Assembling + HANDLING + Packing + HANDLING + Storage + HANDLING

HANDLING—the Common Denominator of PRODUCTION

LET MEN DIRECT POWER—NOT GENERATE IT!

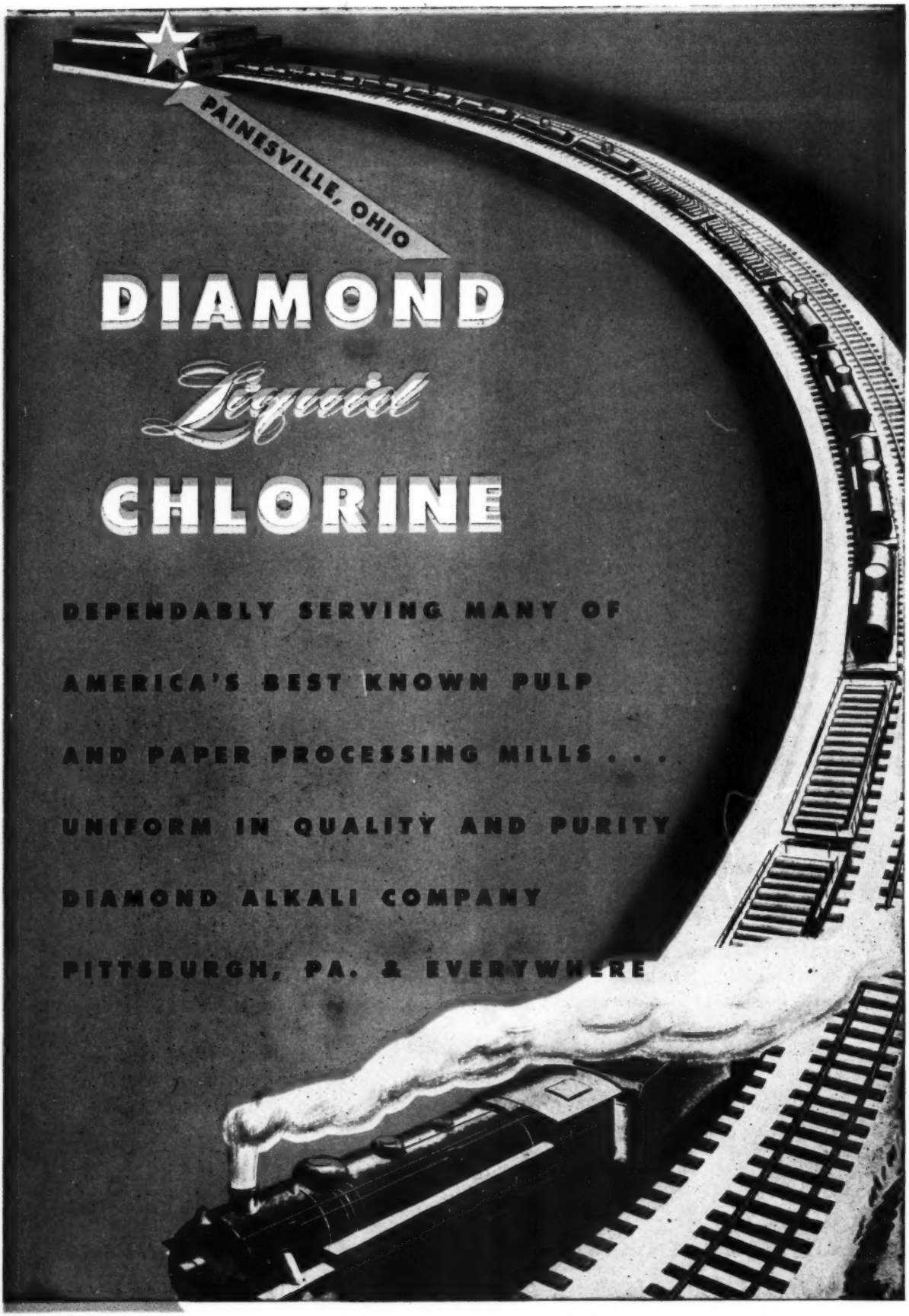
Human effort increases in direct proportion to size and weight of loads moved by hand. With mechanical handling, no extra manpower is needed as loads get bigger. One man directing power equipment, can, for example, move four times as much, faster and more easily.

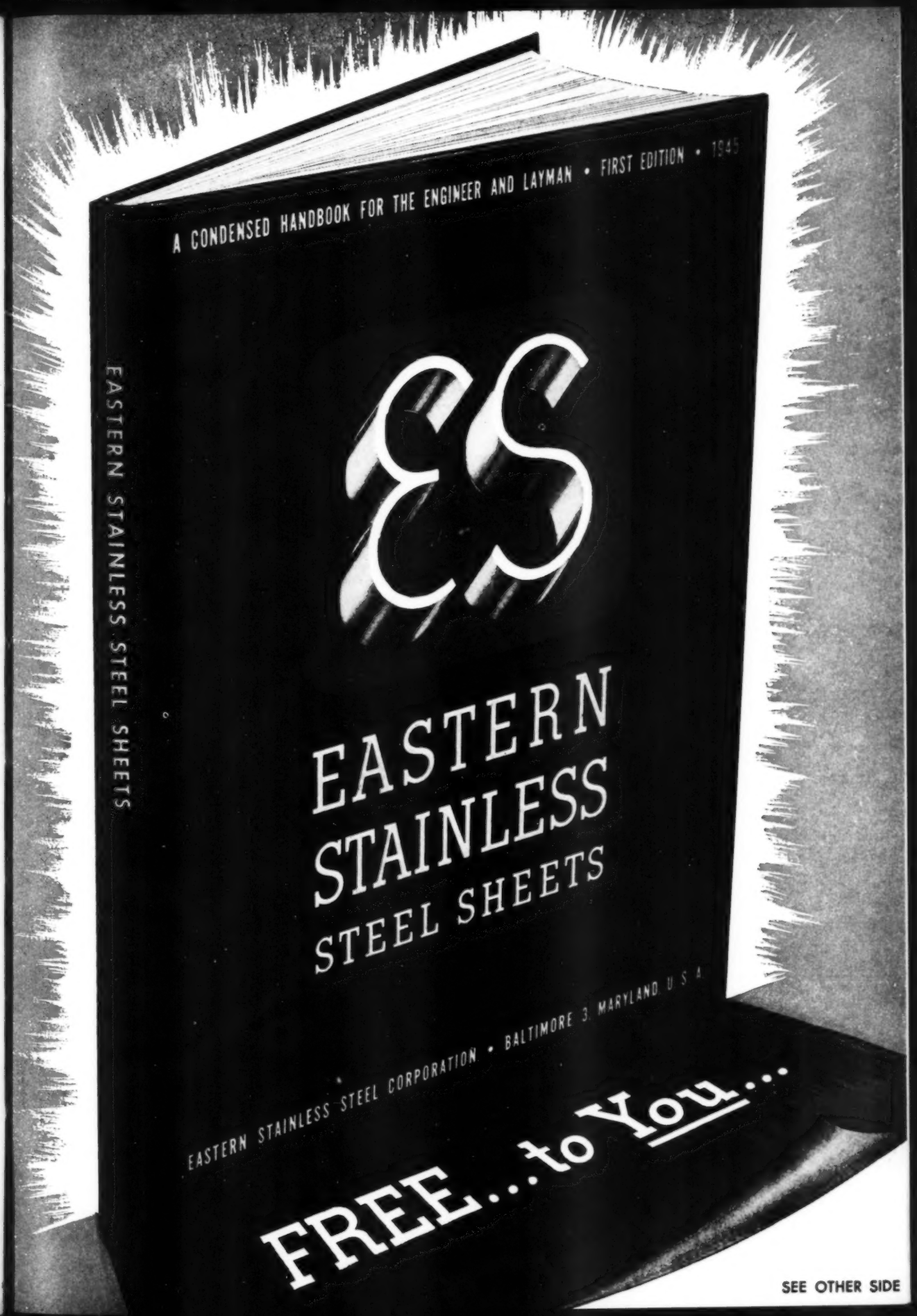
Towmotor, capable of moving, lifting and stacking large, heavy loads, increases manpower capacity, thereby effecting savings in time, money and labor. The Towmotor DATA FILE tells the complete story. Send for your copy today.

TOWMOTOR

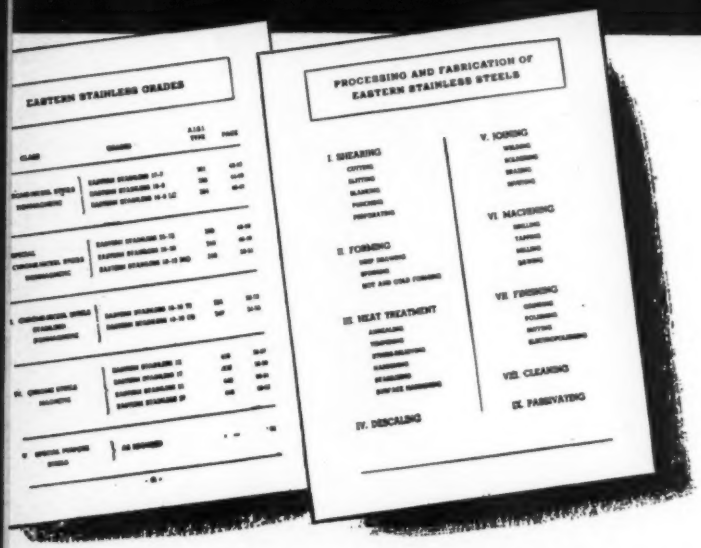
THE ONE-MAN-GANG

TOWMOTOR CORPORATION • 1220 E. 152ND STREET, CLEVELAND 10, OHIO


PAINESVILLE, OHIO
DIAMOND
Liquid
CHLORINE
DEPENDABLY SERVING MANY OF
AMERICA'S BEST KNOWN PULP
AND PAPER PROCESSING MILLS . . .
UNIFORM IN QUALITY AND PURITY
DIAMOND ALKALI COMPANY
PITTSBURGH, PA. & EVERYWHERE


A CONDENSED HANDBOOK FOR THE ENGINEER AND LAYMAN • FIRST EDITION • 1945
EASTERN STAINLESS STEEL SHEETS
ES
EASTERN
STAINLESS
STEEL SHEETS
EASTERN STAINLESS STEEL CORPORATION • BALTIMORE 3, MARYLAND U S A
FREE...to You...
SEE OTHER SIDE

NOW— THE NEW HANDBOOK BY EASTERN STAINLESS STEEL

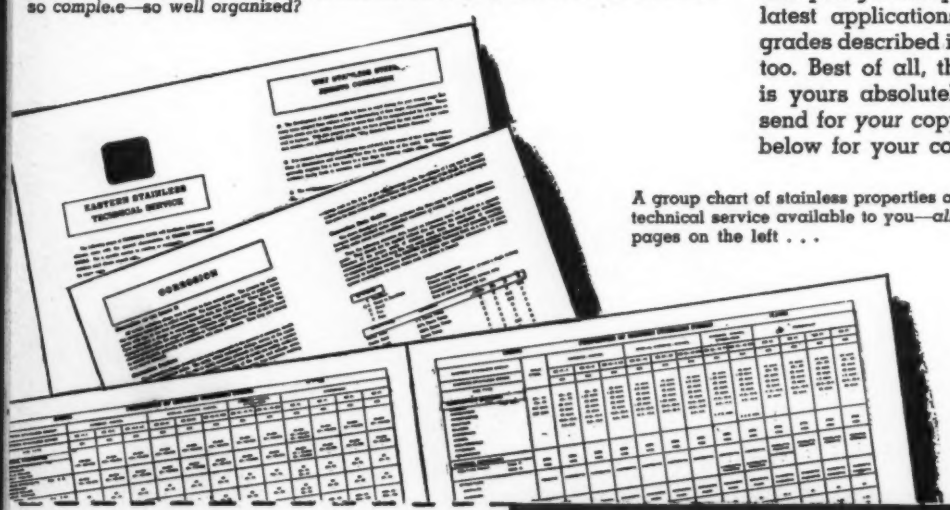


These two sub-indices give you an idea of what it will be worth to you to have this book handy on your desk. Have you ever seen any compilation of facts on stainless so *complete*—so *well organized*?

After months of preparation it's now ready — this valuable 96 page Catalog you've been waiting for!

There's not a page that's not *authentic* in EASTERN's handy new "encyclopedia" on Stainless Steels. And no wonder—the book was actually compiled by top stainless steel specialists . . . EASTERN key men who know not only their own jobs but a good many of your problems too! You'll find they've anticipated your questions and arranged the answers so when you want one you don't have to thumb for it!

But there's more to this book than basic facts. So skillful is the condensation on its 96 pages that you get everything of importance—with the latest applications of various Stainless Steel grades described in detail! Profusely illustrated, too. Best of all, this valuable new hand book is yours absolutely without charge. Why not send for *your* copy today? A coupon is placed below for your convenience in writing.



A group chart of stainless properties and notice of a valuable new technical service available to you—*all in one book*. A few sample pages on the left . . .

EASTERN STAINLESS STEEL CORP.
Baltimore 3, Maryland Dept. 70

Gentlemen: Please send me a free copy of your valuable new 96 page catalog.

Firm Name

Address

City Zone State

Your Name and Title

ask EASTERN for the answer when you ask the question

EASTERN STAINLESS

INSURE AGAINST PIPELINE FLOW RESTRICTIONS BY USING A.C.F.

FULL AREA LUBRICATED PLUG VALVES

4" Cylindrical Plug of A.C.F. Valve. Port Area, 12.73 sq. in. (This type of plug construction permits lading flow equal to 100% of the area of the nominal pipe size).

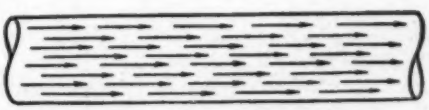
If plant flow capacity requires pipe capable of handling the maximum lading at minimum cost in time, labor, power — specify valves that DO NOT act as brakes! The cylindrical plug of the A.C.F. Lubricated Plug Valve provides a well-proportioned, round-cornered, *full pipe-area port opening* — permits piping to handle fluids with greatest efficiency, at full pressure and with unrestricted flow. Valve life steps up, too, because with the full pipe-area port opening, flow velocities are not increased, abrasion is reduced. Even in the open position, the valve has no seating surface exposed to lading wear.

A.C.F. Lubricated Plug Valves will efficiently handle all processing and industrial plant ladings. Representatives in principal cities carry adequate warehouse stock for quick delivery.

* * *

SOLVES LADING PROBLEMS — Tar, sludge, grouting, asphalt, viscose, rayon, nylon, granular solids, paints and similar viscous or waste materials are all handled efficiently — as are paper pulp, pulp while in process, black liquor, white liquor, caustics, acids. Send for Catalog # 3-P.

Note the turbulence in valve with restricted opening.



No bottlenecks to build up turbulence when valves with *full* area ports handle the lading.

A.C.F.

AMERICAN CAR AND FOUNDRY COMPANY

VALVE DEPT. 30 CHURCH STREET, NEW YORK 8, N. Y.

creasing the output to 30,000,000 gallons as operations expand.

The water treating facilities are being installed primarily to serve the bleaching plant, which will be built as soon as equipment and construction materials become available. Plans call for bleaching kraft, sulphite and groundwood—all the types of pulp used in paper production at International Falls.

The new Mando plant will be built and operated on principles of the patented Permutit system of filtering. Industrial engineers of Hardy S. Ferguson and Company, New York, designed the unit and Mando engineers are overseeing the installations. Paul A. Laurence Company is doing the construction work.

The project will require a brick and steel building 129 by 180 feet in size, with one portion three stories above ground. The higher part will contain bins for storing the chemicals and equipment for unloading and transporting the material purchased in carload lots.

Plans call for precipitators or settling basins that will occupy an area 70 by 123 feet, and filter beds occupying a space 129 by 32 feet. Underlying the filters, but having a much larger cross-section, will be a reinforced concrete chamber to store the clear water for use as needed in the bleaching plant. Fifteen feet deep, 56 feet wide and 129 feet long, this underground "tank" will have a capacity of about 800,000 gallons.

◆

AWARDS FOR COLLEGIATE RESEARCH TO BE GIVEN BY RESEARCH CORPORATION

Research Corporation, New York, a non-profit organization devoted to advancing research and technology, is offering $2,500,000 to educational institutions for postwar collegiate research. This program will enable talented young scientists, engaged for the most part in war research, to undertake at universities and colleges, research of peacetime importance in pure science, especially chemistry, physics, mathematics and engineering.

The five year program was announced by Dr. Joseph W. Barker, acting president of Research Corporation, and Dean of Engineering at Columbia University. It calls for 100 to 200 yearly grants of $2,500 to $5,000, and preference will be given (other factors being equal) to the smaller institutions and those of more limited financial resources for research. Awards will be based primarily upon the demonstrated ability of the men who will conduct the researches and contribute to the teaching program of the school. Funds allotted will be for the purchase of needed equipment and for employment of assistants.

The first grants will be made in a few weeks, and to scientists of the Office of Scientific Research and Development, Army, Navy and other war research agencies, the possibilities of these grants are being made known with an invitation to send applications to Dr. Robert R. Williams, Research Corporation, 405 Lexington Avenue, New York 17, New York.

◆

CAN. I. P. COMPANY MAKES EXCHANGE OF FOREST LANDS WITH QUEBEC GOVERNMENT

Strengthening of the policy of embargo against shipment of wood cut in the forests of the province of Quebec has been brought about in an exchange of forestry lands made by the Quebec Government and Canadian International Paper Company. Announcement of the exchange was made by Premier Duplessis, who pointed out that this comes about following the legislation which Honorable Johnny S. Bourque, Minister of Lands and Forests, had enacted at the last session of the Legislature. The exchange takes from the company large stretches of Crown lands which had been granted by prior governments of the Province plus some freehold lands owned by the company, all located in Gaspe. The company in turn gets forest areas more suitable for its purpose in that they are in closer proximity to the mills, and will help towards stabilization of the forestry industry.

In the past it has been found that, while an embargo applied on wood cut in the province as regards export outside of Canada, the wood found itself in foreign markets through re-export from another province. This will be stopped as far as the lands now given in exchange to Canadian International Paper Company are concerned.

◆

RAYONIER PULP MILL AT SHELTON (WASH.) IS BACK IN FULL PRODUCTION

After an extended shutdown, the pulp mill of Rayonier, Inc., at Shelton, Washington, returned to full production on October 1. The first units were set in operation on September 25. Manager George Cropper reports the employment will total approximately 400.

A new brick and steel stack which towers 375 feet on the crest of a hill overlooking Shelton has been built. This stack was erected to carry away fumes from a newly-installed disposal unit, designed to eliminate pollution of adjacent water by mill waste. It is said to be the first unit of its kind in the State of Washington.

◆

RENOVATION OF FORT EDWARD PLANT COMPLETED

Work has reached the final stages in the renovation of the paper manufacturing plant at Fort Edward, New York, and the Marinette Paper Company, which acquired the property the latter part of 1944 will manufacture a full line of paper specialties, towels, toilet and facial tissue, etc. The Marinette Paper Company is affiliated with the Scott Paper Company, Chester, Pennsylvania.

John B. Hay, of the Chester organization, has been appointed manager of both the mills at Fort Edward and Glens Falls, New York. (The Marinette Paper Company also owns the mill at Glens Falls, formerly the property of International Paper Company.) Francis O. Boylon, as superintendent of production, and Henry Fales, as plant engineer, also have been appointed to both the Fort Edwards and the Glen Falls mills.

◆

▶▶▶ DUE TO THE decreasing supply of timber in British Columbia, the possibility of using balsam for pulp manufacture in the Fort George area is being surveyed and fully investigated by the Dominion Government.

◆

NEW AIR DRYER BEING INSTALLED IN PLANT OF WHITING & COMPANY

Plans for the installation of a new air dryer have been announced by Whiting & Company, Holyoke, Massachusetts. The new equipment will be built in the middle wing of the company's plant, known as Whiting No. 3 mill, which has two fourdrinier machines, each 114 inches wide.

The dryer will be 288 feet long and 14 feet wide. It will be constructed by the Industrial Air Corporation, of Westwood (Mass.), from designs prepared by Whiting engineers.

A tunnel will be built from the west end of the machine room, and through this tunnel the paper will be moved to the dryer. The total installation will cost about $100,000.

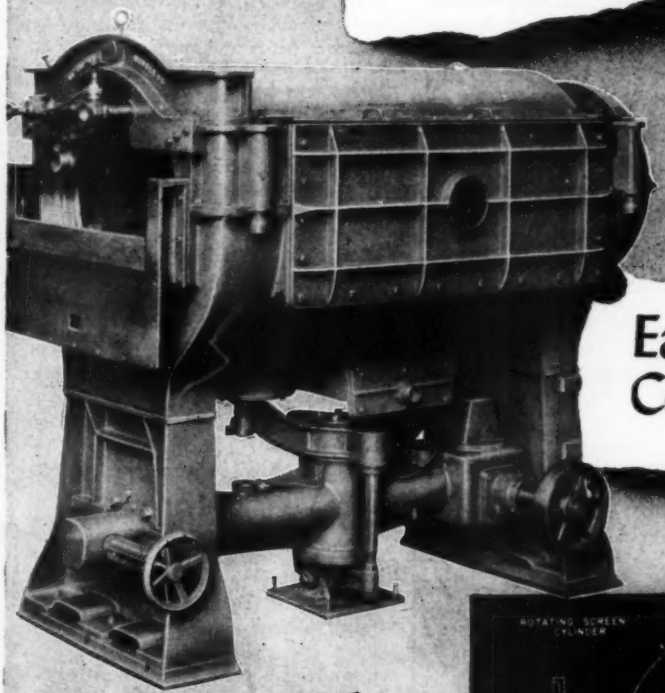
According to Edward C. Whiting, president of the company, and Charles Davidson, Jr., general manager, the new equipment will increase the plant's output of higher grade paper, with cockle finish.

Gentle Screening Action
Correct Stock Agitation

Eliminates Dirt and
Lumps from Stock

Passes Uniform
Fibres . . .
Perfectly Mixed

Easily Cleaned . . .
Completely Accessible



The
JONES
SCREEN

ROTATING SCREEN CYLINDER
UNSCREENED STOCK LEVEL
SCREENED STOCK DISCHARGES THROUGH OPEN END OF CYLINDER
SCREENED STOCK LEVEL
UNSCREENED STOCK INLET
VIBRATING DIAPHRAGM 350 VIBRATIONS PER MINUTE
SCREEN VAT
MOTION OF DIAPHRAGM UP & DOWN THIS MOTION RECEIVED FROM MECHANISM BENEATH SCREEN VAT WHICH IS COMPLETELY HOUSED AND RUNS IN OIL
TAILINGS OUTLET

DESIGN & PRINCIPLE OF OPERATION

Jones

E.D. JONES & SONS COMPANY-PITTSFIELD, MASS.
Builders of Quality Machinery for Paper Mills

Briefs . . .

▶▶▶ LACK OF MEN in British Columbia's logging industry is most critical, according to John Burke, sectary-manager of the B. C. Loggers' Association. Closures of war plants and demobilization of the armed services have not supplied enough workers to replace the high school boys who quit woods employment to go back to school, and three thousand more men are needed to get idle logging equipment working again.

◆

▶▶▶ HOLDINGS OF Shawano Plantation, Inc., located in the Everglades region of Florida, have been sold to Hillsboro Plantations, Inc. Shawano is a subsidiary of the Brown Company, Berlin, New Hampshire.

◆

▶▶▶ A NEW redistribution of forestry concessions has been made concerning the Anglo Canadian Pulp and Paper Mills, Ltd., of Quebec City, and the Quebec North Shore Paper Company of Baie Comeau. Anglo has transferred to Quebec North Shore the forest limits in the region of the Saguenay on the Manicouagan and its tributaries, which is necessary to Quebec North Shore to assure the permanence of its operations. For its part, Anglo has received from the province the limits within reach of its mill at Quebec.

◆

▶▶▶ A CAMPAIGN to obtain 50,000 additional workers for woods operations in Canada has been announced by Labor Minister Mitchell. Heaviest demands are in Quebec and British Columbia, although some men are required on the Prairies and in the Maritime Provinces. Recruiting of this additional labor will be carried out through the National Employment Service with the assistance of provincial agriculture officials working under Dominion-Provincial farm agreements.

◆

▶▶▶ THE WILLIAMSBURG, 243-foot offshore cruiser used during the war as a patrol vessel gunboat and flagship of the Atlantic Service Force, has been designated as the official yacht of the President, and will be given a general overhauling to provide him with living and working space when he is at sea. The Williamsburg was formerly owned by Hugh J. Chisholm, president of the Oxford Paper Company.

▶▶▶ IN LINE WITH St. Regis Paper Company's plan to devote its entire attention to, and extensively expand its pulp, paper, multiwall paper bag, packing machine and plastics division, the company has sold its majority stock interest in Skenandoa Rayon Corporation, Utica, New York, to Beaunit Mills, Inc., at a reported capital gain of approximately $2,000,000.

◆

▶▶▶ INCREASE OF 15 per cent in production of newsprint during the first half of 1945 over the same period last year has been reported by the Powell River Company, Ltd., Powell River (B. C.). At the same time there was an increase of 5 per cent in output of other paper and pulp products and an increase of 22 per cent in the production of lumber. These gains were accomplished despite a decline of 11 per cent in log output. The company produced 89,833 tons of newsprint and 35,463,000 board feet of lumber.

◆

▶▶▶ ACCORDING to the Dominion Bureau of Statistics, gross value of products of Canada's pulp and paper industry reached a record of $369,846,000 in 1944, representing an increase of 7.4 per cent over 1943's previous record and an increase of almost 200 per cent over the record low of 1933. Production for 1944 was more than 1½ times that of 1929.

◆

▶▶▶ THE BAIE COMEAU plant of The Quebec North Shore Paper Company is being expanded by the addition of a digester building, and a pulp building which will house a pulp dryer for either drying sulphite or groundwood pulp for the American market. This will increase production of the Baie Comeau plant by 10,000 tons a year of sulphite pulp.

◆

▶▶▶ THE GREAT LAKES Paper Company's mill at Fort William, Ontario, will be operating at capacity early in 1946, as its $400,000 plant expansion program nears completion. The new construction includes drying equipment for sulphite pulp, modern warehousing and shipping facilities, and additional wood-handling equipment.

◆

▶▶▶ THE UNION BAG and Paper Corporation, Savannah, Georgia, has completed arrangements for a loan of $10,000,000 with a banking group headed by J. P. Morgan & Company, Inc. Part of this will be used to retire a present loan with an insurance company, and the balance for expansion and other corporate purposes.

TO OBTAIN *Required* GAS PRESSURES

If you are interested in a gas pump that will keep pressures where you want them — and still be economical in power and maintenance costs — you should have a copy of Bulletin 31-B-15. A copy is waiting for your request.

ROOTS-CONNERSVILLE BLOWER CORP.
One of the Dresser Industries
510 Monroe Avenue Connersville, Indiana

Roots Connersville Since 1854

BLOWERS and GAS PUMPS

for water or chemical storage...

Use Flat-Bottom Storage Tanks of Welded Steel Construction . . .

Today's pulp and paper mills use many types of welded steel storage tanks during daily operations. When these storage tanks are designed and built to perform a special job at the mill, it stands to reason that they will provide the most efficient service.

The flat-bottom storage tanks which we build for the paper industry are planned for specific paper mill service from blueprint to final installation. The units shown on this page are typical of the kind of tanks we have supplied to the industry.

In addition to flat-bottom storage tanks, we build elevated water tanks, steel pipe, diffusers, bins, digesters, cookers and standpipes. When specifications call for x-raying or stress relieving we are equipped to handle this type of work.

The photograph at the top of this page shows a 40 ft. diam. by 20 ft. flat-bottom water storage tank which we furnished to a paper mill in the South. The tank shown at the middle right is a fresh water tank 25 ft. in diam. by 15 ft. high, and the unit shown at the bottom right is a 40,000-gal. tank we built and installed at a paper mill in Florida.

Plan now for modernizing your mill with welded steel storage tanks *designed* and *built* for the job.

CHICAGO BRIDGE & IRON COMPANY

Chicago, 4.....**2445 McCormick Building**
New York, 6.....**3350-165 Broadway Building**
Cleveland, 15.....**2267 Guildhall Building**
Los Angeles, 14.....**1459 Wm. Fox Building**
Birmingham, 1.....**1511 North 50th Street**
Atlanta, 3.....**2143 Healey Building**
Tulsa, 3.....**1651 Hunt Building**
Houston, 1.....**5643 Clinton Drive**
Philadelphia, 3.....**1653-1700 Walnut Street Building**
Washington, 4.....**703 Atlantic Building**
San Francisco, 11.....**1217-22 Battery Street Building**
Havana.....**Edificio Abreu 402**

Plants at BIRMINGHAM, CHICAGO and GREENVILLE, PENNA.

In Canada: HORTON STEEL WORKS, Limited, FORT ERIE, ONT.

TESTING FOR WATER RESISTANCE!

This laboratory immersion test verifies what many users have learned from experience . . . that Nopco Wax Sizes give all-around water resistance.

THIS EFFECT is explained in the action of the Wax Sizes which thoroughly coat the entire fiber mass. They adhere to the fiber because they are precipitated by the alum, thus assuring better retention of the wax while the stock is on the wire. Nopco Wax Sizes ride the gamut of specifications to give equally effective results at various concentrations.

Other Advantages

Nopco Wax Sizes help improve finish and feel, increase scuff resistance, and help make coating more effective and economical. If you are a large user of wax emulsions for waterproofing paper and paperboard products, you will find it economical to make your own wax size with Nopco 2251-B Wax Emulsifier. Emulsions prepared with it are *stable* at any concentration, from an infinite dilution up to 70% solids.

If you prefer a ready-made paraffin wax emulsion—Nopco 2252 is the product to use. It effects worthwhile savings in alum and casein costs where the sheet is subsequently coated—contains 50% effective waterproofing solids—is stable in any dilution or under any type of mechanical agitation. We will gladly send you technical data on use of Nopco 2251-B Wax Emulsifier or Nopco 2252 Wax Size.

NOPCO Wax Sizes

NOPCO **EVOLVED THROUGH RESEARCH**

NATIONAL OIL PRODUCTS COMPANY, HARRISON, N. J.

CHICAGO • BOSTON • CEDARTOWN, GA. • RICHMOND, CALIF.

FOR ASSURED VALVE PERFORMANCE

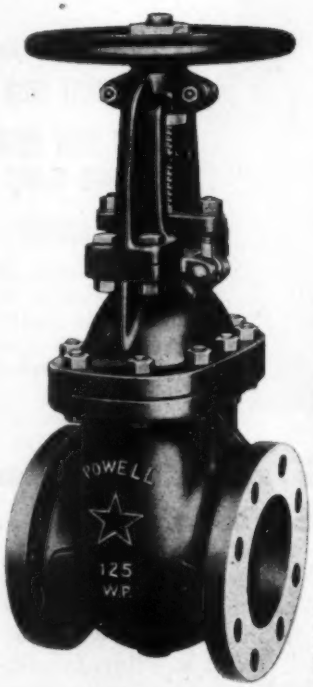
consult Powell Engineering first

LET'S BE SURE THE EQUIPMENT FITS THE JOB!

Everyone knows it would be silly to enter a Draught Horse in a race. On the other hand, a Thoroughbred wouldn't last long pulling a heavy load. But unless you're an expert valve engineer, it's not so simple to determine what type, design and material a valve should be to do a specific job. Powell Engineering, with a background of almost a century of research, experimentation, and practical experience, will be glad to assist you in selecting the correct valves to meet your particular flow control requirements.

The Wm. Powell Co., Cincinnati 22, Ohio

DISTRIBUTORS IN PRINCIPAL CITIES



The valves shown are made especially for Paper Mill Service. For handling extremely corrosive media we recommend the all stainless steel valves. Consult Powell Engineers.

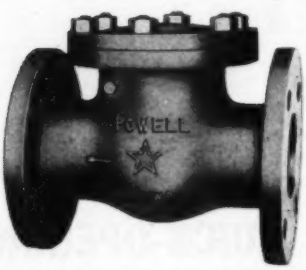


Fig. 2433—Flanged End Stainless Steel Swing Check Valve for 150 pounds W.P. Bolted cap.

Fig. 1899—Flanged End Swing Check Valve for 125 pounds W.S.P. Body is of low nickel iron, with stainless steel seat and disc. Disc of Ni-resist can be supplied, if desired.

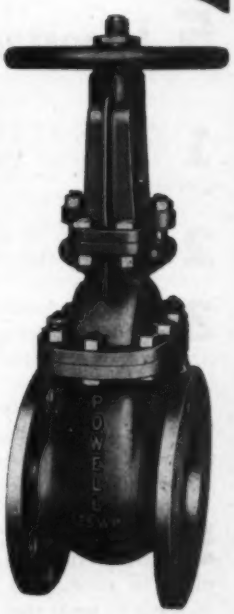


Fig. 1893—Flanged End O. S. & Y. Gate Valve for 125 pounds W.S.P. Has low nickel-iron body and yoke, with stainless steel seats, disc and stem. If desired, disc made of Ni-resist can be supplied.

Fig. 2453—Flanged End, Stainless Steel O. S. & Y. Gate Valve for 125 pounds W.P. Stem is threaded through bronze bushing in upper yoke arms.

POWELL VALVES

Sandy Hill

QUICK-OPENING

GATE VALVE

Designed especially for handling
PULP & PAPER STOCK AND WATER
under
LOW PRESSURE

5 Important Advantages

1 QUICK-ACTING. Can be opened in a fraction of the time required with a screw valve.

2 Slide can be held in any required position by the clamp.

3 Slide can easily be removed from valve without taking valve from the pipe—simply loosen bolts holding bonnet to body.

4 If valve becomes clogged, preventing proper closing of slide, valve can readily be cleaned by loosening bolt on bottom plate and turning it to one side.

5 Stem end is cut standard pipe thread, permitting extension by connecting a piece of pipe. No threads on working part of stem to wear out. No nuts or hand wheels to be broken or lost. Gate cannot get loose from stem.

Write for folder!

Available in

ALL CAST IRON

CAST IRON WITH BRONZE SLIDES

ALL BRONZE

Flanges may be had plain, as normally supplied, drilled or drilled for spiral bevel pipe.

QUICK-OPENING . . . for those places where a valve MUST open quickly . . .

. . . on all stock pipes leading to screens . . . on wet machines . . . where rewater is used over again to thin the pulp coming from grinders . . . in connection with beaters, when slush pulp is used . . . on all pipe lines furnishing slush pulp . . . in any place where low pressure valves can be used.

THE SANDY HILL IRON & BRASS WORKS
HUDSON FALLS, N. Y.

Anyhow, it's down-to-earth in cost!

NOT all the ideas for building this postwar world will be so-called war-born miracles. Some of them will be—in fact, *must* be—simply sensible, down-to-earth ways of knocking the daylights out of construction costs.

A good example of this will be found in the big cut that can be effected by getting away from the old practice of using heavier, more costly pipe for services that can be handled equally well by lighter, more economical Taylor Spiral Pipe.

In too many plants for too many years the practice has been to use Standard Thickness pipe for all run-of-plant piping. And yet a large percentage of this run-of-plant piping is for services like those listed below —applications that can be handled adequately and with strength and service life to spare by light-but-strong Taylor Spiral Pipe.

It is the higher strength-to-weight ratio of Taylor Spiral—a result of the spiral construction—that gives this light wall pipe the ability to do the work of much heavier pipe. The light weight cuts initial cost, transportation cost, handling cost, erection cost—often cuts the installed cost of a Taylor Spiral job to half that of the Standard Thickness Pipe it so well replaces. Think what that means in terms of *your* piping costs.

Switching to Taylor Spiral Pipe for services like those listed is made easy by the complete range of sizes and wide variety of fittings. Thicknesses range from 12 to 8 gauge; sizes from 6″ to 42″; joint lengths up to 40 ft. All types of end joints and couplings, all kinds of fittings and specials or fabricated assemblies are produced by Taylor Forge & Pipe Works, assuring complete service and undivided responsibility.

TAYLOR FORGE & PIPE WORKS

General Offices & Works: Chicago, P. O. Box 485 ★ New York Office: 50 Church St. ★ Philadelphia Office: Broad Street Station Bldg.

TAYLOR SPIRAL PIPE

CHANGE TO TAYLOR SPIRAL PIPE FOR:

- High and Low Pressure Water Lines
- Low Pressure Steam and Air Lines
- Steam and Diesel Exhaust Lines
- Vacuum and Suction Lines
- Blower Piping
- White Water Lines
- Pulp Stock Lines
- Paper Stock Lines
- Alkaline Lines
- Size Lines
- Swing Pipe
- Spray Pond Piping

Converts

CORN STARCH

INTO THE MOST ECONOMICAL TUB SIZING, CALENDER SIZING AND LAMINATING ADHESIVES

R. T. VANDERBILT CO., INC.

230 Park Avenue, New York City

EDITORIAL . . . . . .

We Still Need More Paper

▶▶▶ "THE POSTWAR DEMAND for paper promises to exceed anything ever seen before. It may reach twenty-three million tons during the next two months." This statement, made recently by an executive of the American Paper and Pulp Association, is true. The same statement also may be applied to all other commodities, for if there were not a huge postwar demand for other commodities, there would not be the huge postwar demand for paper.

A plentiful supply of paper is necessary to expanding activity, for paper is the concomitant and essential commodity upon which the initiation, processing, progress, and maintenance of industrial activity must depend.

Furthermore, paper is the index of progress, and that nation which is the most progressive, the most prosperous, the most powerful, and the most civilized is the nation that uses the most paper in its national processes.

That nation is the United States of America!

In 1937, all of the nations of the world consumed thirty-seven pounds of paper per capita. In 1941, the consumption of paper in the United States was 300 pounds per capita. Moreover, the United States is not only the greatest consumer of paper—it also is the greatest producer of paper products of any nation in the world. Nevertheless, the United States does not now produce enough paper to supply its present demand.

The reason is simple. Since 1941, when we produced 17,762,000 tons—a record-breaking production all of which went into current consumption—very little wood pulp capacity has been added.

In the meantime—for three years and ten months—the paper industry has been operating under forced-draft conditions, confronted at all times with a demand for products which it has been wholly unable to meet.

True, it did a handsome job in meeting the war demand. So far as we have been able to ascertain, not one essential war order remained unfilled. However, that was done at the expense of civilian economy, a sacrifice of critical supplies to meet wartime demands.

Thus, for three years and ten months, all civilian stocks, inventories and reserves of paper products, plus reserve stocks at paper mills, were fed into the maw of an insatiable, growing, and growling demand.

Have you ever seen the estimate of the amount of tonnage required to replace the exhausted stocks in these various distribution and consumer channels? The figures would stagger you.

Today, in America, we have reached the bottom of the paper barrel. And it is only five months since the capitulation of the Germans, and two months after the collapse of the Japs, with paper scarcer than at any time during active war days.

What's wrong? Answer: *Not enough paper production.*

In 1944, we produced 17,182,804 tons of paper—579,561 tons less than the peak production of 17,762,000 in 1941. This is the net loss for all grades of paper and paperboard, with paper production decreasing and paper consumption increasing. However, the comparison between the paper production and board production (see tabulation) gives a clew to why paper is so much tighter in 1944 than it was in 1941. Thus the paper industry went into 1945 with a shortage of over a million tons of paper as compared to 1941 production. In addition, the increase in population since 1941 calls for another 1,350,000 tons on the basis of the 300 pounds per capita consumption rate in 1941.

It takes years to locate, build, and bring into production the requisite number of mills, plus the raising of hundreds of millions of dollars of capital investment. With paper production decreasing, and paper consumption increasing at an unprecedented rate; with stocks and inventories of paper exhausted everywhere; and no semblance of adequate planning of new production to meet the present and future consumption need for paper, will sombody tell us how we shall maintain our national supremacy and world leadership?

Year	*Total Paper Production*	*Total Board Production*	*Total*
1941	9,362,405	8,399,960	17,762,365
1944	8,220,236	8,962,568	17,182,804
	1,142,169 Loss	562,608 Gain	579,561 Loss

◆

How About It?

▶▶▶ HAVE YOU BEEN ABLE to take care of all of your regular paper customers during the war years? Have you accepted every order for paper that came to you from the day war was declared until the day it ended—or even up to this very moment.

Probably such questions may appear foolish; because everyone knows that paper was a scarce item throughout the war period and still is.

It just was an impossibility in spite of the marvelous technical and production co-operation of all mills in the industry to meet wartime demands for its products. Some old customers had to be turned down and orders from new customers, without the right priorities, could not be accepted.

Now the question is, how did you do this job of rejecting business? Did you keep the good will of those firms from which you could not accept orders; or did you just give them a brush-off?

With the return of competitive buying, every pulp and paper mill and every other business establishment for that matter, will be looking for business. Orders will be sought just as eagerly as they were before the war.

Just as you found it necessary in the past several years to turn down orders for paper, some of your suppliers also probably were unable to meet your needs for chemical raw materials, pulp, wastepaper, pulpwood, and equipment of one sort or another. How did you receive these rejections of business?

It is hoped that a rejected customer never told you that never again would he attempt to place an order with your firm or that you never commented in much the same way to one of your possible sources of supply.

However, if, in the excitement and fervor of the war, you may have been guilty of so doing, there is no better chance than now to correct it. It can all be done if you are willing to put into practice—"Therefore all things whatsoever ye would that men should do to you, do ye even so to them."

Current Thought

It's a Matter of Minerals

WILLIAM SIBLEY

▶▶▶ IT MAY BE educational to some of you to learn that uranium (the mineral which changed Emperor Hirohito's mind so suddenly, thanks to the atomic bomb) is by no means a rare element. Indeed, the presence of uranium is so prevalent that there is little or no possibility of keeping it away from designing nations or psychopathic leaders who wish most of all to see, during their life time, the world on fire. Uranium is the 25th element in order of abundance, being exceeded only by copper, and itself considerably exceeding the element of tungsten. It is twice as abundant as znic and almost four times as plentiful as lead. It is many times more plentfiul, or common, than tin, silver, or gold. . . . Push that fact around in your mind, please, as you read, then re-read, the Truman decision (and the Congressional debates) regarding the disposition of the "secrets" of the atomic bomb. If used improperly, the world is destined to extinction. If used properly the world is destined to an era of prosperity incomprehensible to present day civilians. And, it is all a matter of minerals. Chiefly uranium, to be sure. But other (and all) minerals besides. Let's talk, briefly regarding uranium—the violently destructive element, if used improperly.

Believe it or not, uranium occurs in easily detectable amounts in most granite and sedimentary rocks. Shales hold more uranium than sandstones, and sandstones more than limestones. The sources from which it is known to be recoverable, by present-day methods, are so widespread as to permit the listing of such territories as: Northwest Territory (Canada), United States (several states), Belgian Congo, Czechoslovakia, Portugal, Australia, Norway, Sweden, and European Russia. These are the primary producing areas. Secondary areas might be named as Bulgaria, Germany, Madagascar, England and Brazil—not to speak of India.

And if you add to this picture the fact that uranium is recoverable from such common deposits as pegmatites, oil shales, coal, and bitumin, you realize that the material is so widely distributed as to be beyond control of any "United Nations" edict or any centralized "secret."

Since uranium, with its constructive as well as destructive properties, is now the most vital metal in the world—the widespread use of this metal needs positive control. As a matter of fact, so do *all* metals. Iron, steel, copper, magnesium, aluminum, and a hundred and one other alloys, need equal supervision. Without metals, of some sort or another, no nation can wage war. And if we are to control (and prevent) subsequent wars, then there must be set up some means for the control of metals.

On this premise, here is my little pig-squeak voice in recommendation:

Let us establish a "Minerals Attache," in every consulate of the world. Not alone in American consulates, but in the consulates maintanied by every other nation on earth. Here in the United States, at wherever foreign countries maintain consulates, let there be an English, French, Spanish, Argentine, Portugal, Norwegian, Swedish, Swiss, Chinese—or what not. Minerals consuls should be established—just as today there are Commercial Attaches. . . . Similarly, in every foreign capital and principal city, we would have American Mineral Consuls or Mineral Attaches. Every nation would augment its consulate staffs under this plan, with a man specialized in minerals—mineral recovery and disbursements.

Such a man—let us imagine we are talking about our own American attaches—would know all of the mineral deposits in the country or territory he governs. He would know the extent of each metal—where they were to be found, the methods by which they were being extracted, and how those metals were used, either in export trade or in domestic manufacture—and for what purpose.

With such an international check, one nation against the rest of the world (ourselves keeping check on all other nations as well as each other nation keeping check upon us), there could be no concentration of certain minerals in one place; there could be no shipment of scrap iron to Japan (as there was during 1931 to 1940); there could be no new developments with metals which would not be known to practically all governments simultaneously.

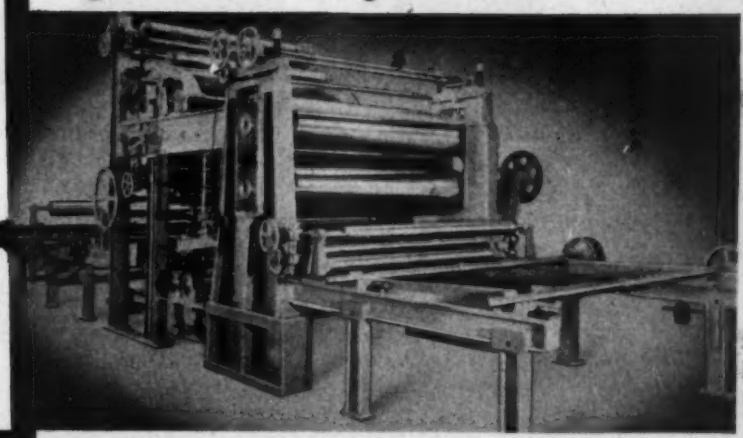
By such means there would be an international check upon the production and use of metals (or whatever sort) by every nation on earth. And, it seems to the writer, that here is an inexpensive yet positive way to check World War III—if only because another war cannot be waged without the use of some metal, in some form.

People may say, as of now, that it would be a simple matter for some psychopath in San Salvador, to arm 150 "traveling salesmen" with suit cases or portfolios and dispatch them to the 99 cities of the United States with well-timed atomic bombs. Bombs timed so that each of the 150 saboteurs could get out of the country, or back home. Whereupon—BOOM—up and into oblivion goes the 99 cities of the United States over 100,000 population—and the U. S. would be no more.

But I choose to take a more optimistic view of the use of the broken atom. I choose to think of it as a great and almost incomprehensible factor for good to this generation. However—we still have psychopaths amongst us—and that makes necessary some sort of control over minerals.

The torch of Liberty held high is the official insigne of the Great Victory Loan which the Government is offering to its people—You and I—through November and December. As in war we bought and fought; for peace we must pay and PAY.

PART OF THE PICTURE of famous products



WALDRON LAMINATORS

Send For This NEW CATALOG

Just off the press! It explains the principle, advantages and modern methods of laminating, illustrates and describes the many types of WALDRON Laminators.

Request a copy on your letterhead. No obligation.

Essential protection for the food of our fighting men is a vital assignment entrusted to Dobeckmun's Metalam. This effective heat sealing and moisture proof combination of aluminum foil and laminated acetate film for packages safely carries dry or liquid rations without danger of spoilage.

Here is a typical example of the almost unlimited variety of products that can be produced by combining two or more plies of different materials by means of proper laminating on WALDRON Machines. Whether the essential requirement is protection, rigidity or decorative quality or a combination of all, there's a WALDRON LAMINATOR designed to produce the product.

Why not consult our experienced engineers on the possibilities for your product—present or planned?

JOHN WALDRON CORP.

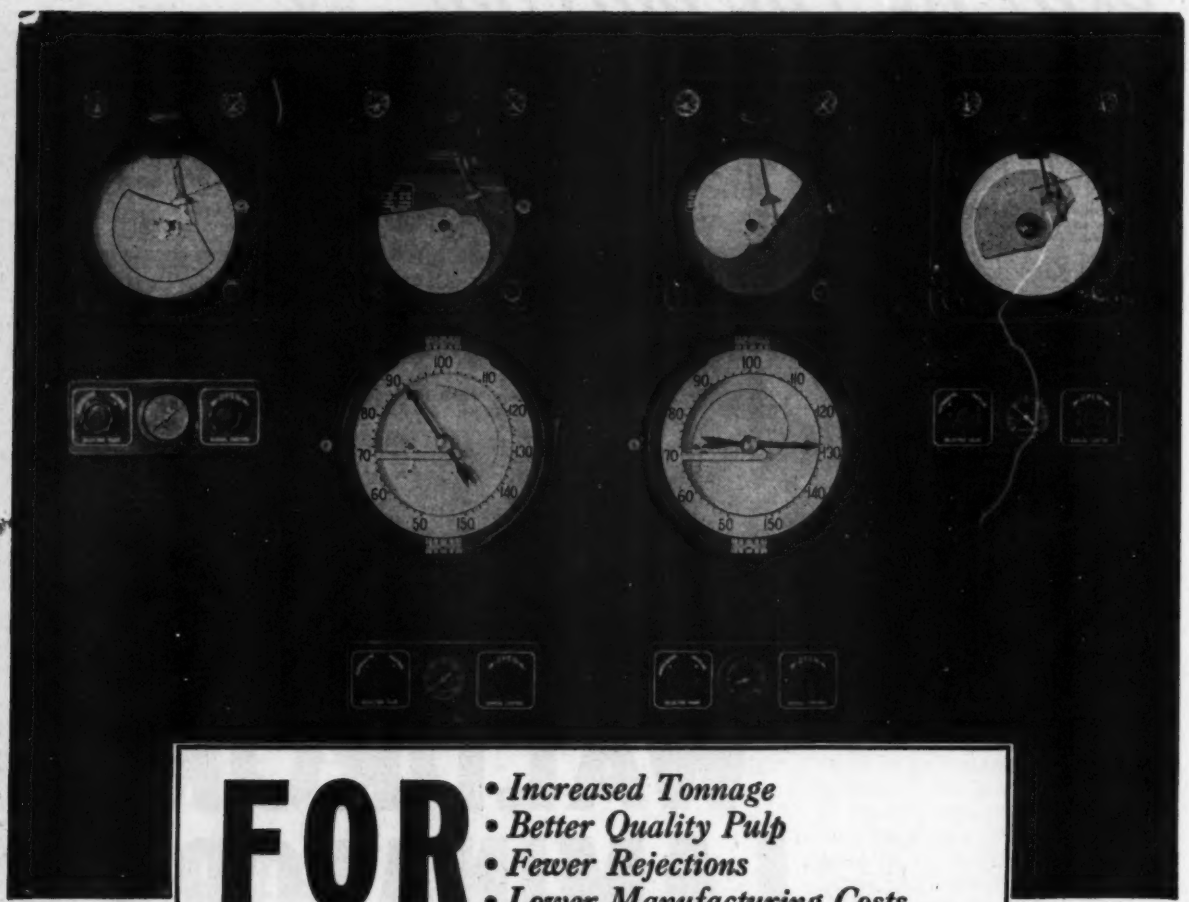
Main Office & Works – NEW BRUNSWICK, NEW JERSEY

CHICAGO - 6
201 N. WELLS ST.

NEW YORK - 17
350 MADISON AVE.

BOSTON - 9
79 MILK ST.

BUILDERS OF QUALITY MACHINES SINCE 1827



FOR

- *Increased Tonnage*
- *Better Quality Pulp*
- *Fewer Rejections*
- *Lower Manufacturing Costs...*

USE MASONEILAN DIGESTER CONTROLS

Remove as many variables as possible at the Digester and keep those remaining under strict control . . . then you're sure to get uniform pulp at decreased cost.

Masoneilan Digester Controls do just that by taking the guesswork from the cooking process. Once a cycle is determined, these controls will repeat any selected program year after year. Here are the advantages Masoneilan Digester Controls give you —

A UNIFORM PULP — by holding a constant time and pressure schedule and by varying the maximum cooking temperature to compensate for variations in the amount of free SO_2 in the cooking acid.

FEWER REJECTIONS — by controlling the selected and maximum temperature schedule.

UNIFORMITY FROM COOK TO COOK — Masoneilan automatic time cycle controllers consistently repeat and record the pressure and temperature of successive cooks.

LOW STEAM CONSUMPTION — Program controllers prevent over-temperaturing — hence over-cooking. On indirect circulating systems hot condensate is returned to boiler house at considerable saving.

UNIFORM STEAM CONSUMPTION — cycle controllers allow for proper spacing of boiler load.

GAS RECOVERY — time cycle control of relief gas properly proportions it to the recovery process to keep uniform strength in the reclaimed acid.

GREATER PRODUCTION — accurate timing and scheduling of each cook produces greater tonnage.

INCREASED PULP STRENGTH — pop and fold strength increase due to uniformity of the temperature cooking schedule.

DECREASED BLEACHING COSTS — uniformity of pulp decreases the chlorine requirement.

Add your name to our list to receive new bulletin now in preparation

MASON-NEILAN
1196 ADAMS STREET

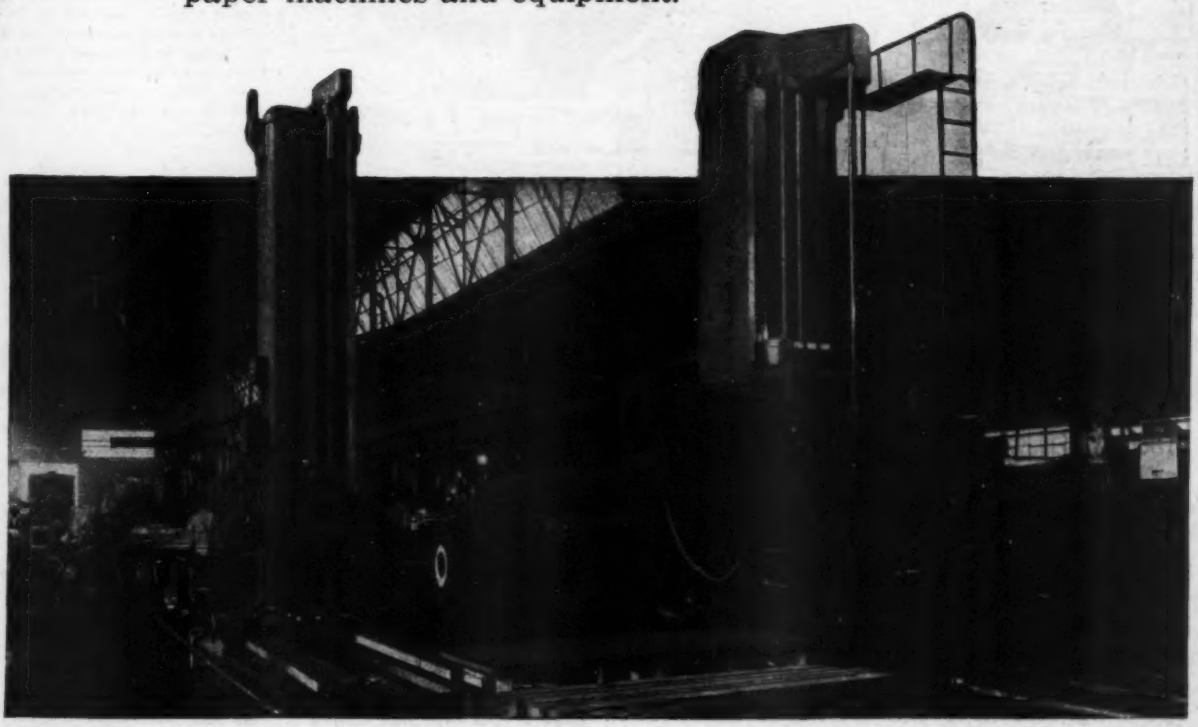
MASONEILAN

REGULATOR CO.
BOSTON 24, MASS., U.S.A.

Ready FOR RECONVERSION!

With the victories both in Europe and in Japan now in back of us, American industry moves to rehabilitate itself to the production of civilian goods and equipment. Although actively engaged in the production of war contracts, the Bagley and Sewall Company today is ready to serve the paper industry completely and efficiently. Vast modernization of its manufacturing facilities assures a definite step-up in plant production. There are new methods, new machines, new ideas.

Consultation is invited with a Bagley and Sewall Company representative for a discussion of any problem that you have in your mill or the installation of paper machines and equipment.



BAGLEY B&S SEWALL

THE BAGLEY & SEWALL COMPANY

WATERTOWN, - NEW YORK

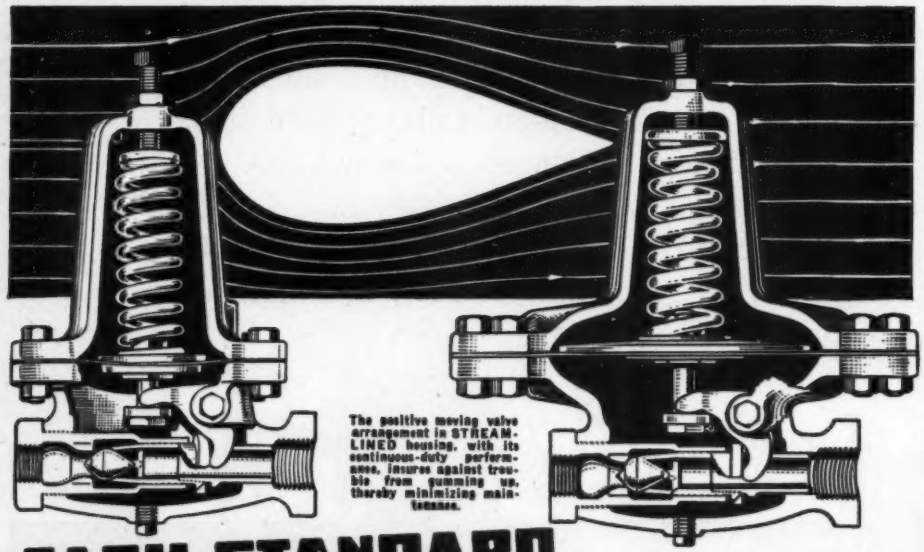
Designers and Builders of Paper Making Machines . . Simplex Fourdriniers . . Simplex Shakes . . Harmon Screens . . Paper Machine Drives . . High Speed Winders and Reels

You Get

MUCH MORE IN SERVICE

Because there's

MUCH MORE IN ABILITY



The positive moving valve arrangement in STREAM-LINED housing, with its continuous-duty performance, insures against trouble from gumming up, thereby minimizing maintenance.

CASH STANDARD *Streamlined* TYPE 1000 PRESSURE REDUCING VALVES

There's much more ability in the CASH STANDARD "1000" because of the Streamlined design which has eliminated small ports and passages and complicated mechanism and in which there are but few close fitting parts.

Streamlined flow around the inner valve means no trouble from lack of capacity—even under peak load or sharp changes in demand the aspirating effect gets the valve wide open for maximum flow —you get accurate pressure control under tough operating conditions and there's never variation in the reduced pressure.

1. Maximum Capacity when needed most
2. Accurate Pressure Control under toughest working conditions
3. Trouble-free Service
4. Smooth Operation
5. Tight Closure
6. Accurate Regulation
7. Speedier Production Results
8. Elimination of Failures
9. Constant Delivery Pressure
10. Cost Saving Operation
11. No Spoilage
12. Practically zero in maintenance costs

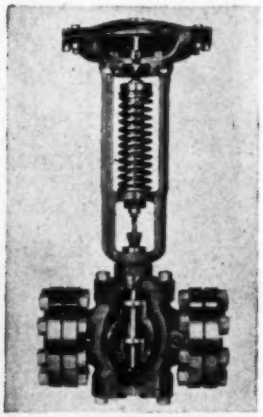
Read Bulletin 1000

See how this Streamlined design can fit your job — send for Bulletin 1000—read the detailed reasons for the greater performance ability —see why you can be sure of savings in operating and maintenance costs.

CASH STANDARD CONTROLS.. VALVES

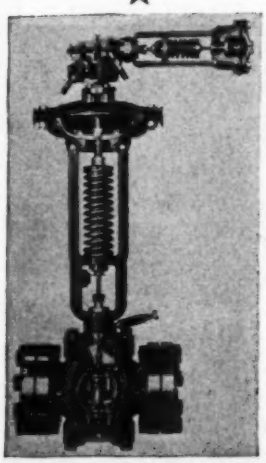
A. W. CASH COMPANY
DECATUR, ILLINOIS

OTHER VALVES *from the* CASH STANDARD LINE



Cash Standard Type 34 Pressure Reducing Valve. For practically all fluids. Has roller bearing, also roller guides that kill side strains and stop packing trouble —no lost motion.

Sizes: ½" to 12" inclusive. Highest initial pressure 800 lbs.; reduced pressure vacuum to 150 lbs. Bodies: iron, bronze, steel. Trim: iron, bronze, stainless steel. Ends: screwed, flanged, ammonia type, welding type. Bulletin 968.



Cash Standard Type 30-AP Valve gives precise control of fluid pressures, through a pilot connected to the pressure under control. For steam, water, air, and most fluids.

Can be a pressure reducing valve or a back pressure valve depending on the way the control lines are connected. Pressures up to 600 lbs. Sizes ½" to 12" screwed; 1" to 12" flanged ends; wide variety of metals.

Dryer Felts

"Engineered" to Each Mill's Requirements

With experience in the manufacture of dryer clothing, dating back to the beginning of the modern paper dryer, HOOPERWOOD "Canvas Engineering" has produced not one but several distinct types of Cotton and Asbestos Felts.

This policy has been of real assistance to Paper Mill Superintendents, in suiting the particular requirements of their mill—even down to each machine position, if desired.

Therefore, if it is a rugged, heavy felt you need for fine finish in normal production . . . or a lightweight, extra-porous felt for faster drying . . or an Asbestos Felt to withstand the advanced temperatures involved in high-speed production of Kraft and other heavy papers—HOOPERWOOD "Canvas Engineering" has the answer to your problem.

WM. E. HOOPER & SONS CO.

New York PHILADELPHIA Chicago

Mills: WOODBERRY, BALTIMORE, MD.

HOOPERWOOD DRYER FELTS

COTTON AND ASBESTOS

Suction Box Covers That Last Longer

Six, eight, ten times and even longer . . . that is how Ryertex Suction Box Covers are wearing as compared with other materials. But there is nothing unusual about that type of performance with Ryertex. The hard, smooth surface of Ryertex—its low coefficient of friction—gives a better seal between the felt or wire and suction box cover and permits the reduction of vacuum without sacrifice of water withdrawal. Ryertex resists erosion, and it has a toughness and resilience that assures outstanding performance in all bearing applications.

Suction Box Covers are only one of many uses for Ryertex in the manufacture of paper. Doctor blades, as well as bearings for press rolls, calender stacks, beaters, jordans, grinders, bleachers, jack ladders, conveyors, log hauls, drum barkers, screens, bark presses, knotters, chip crushers, deckers, refiners and other paper-making applications find Ryertex a favorite.

Ryertex is composed of textile and resin formed under heat and pressure. It can be molded or machined to fit any bearing application. Water, oil, grease or any combination of lubricants is satisfactory. Ryertex bearings have proven time and again that they outlast and outperform other types of bearings used in the manufacture of paper.

JOSEPH T. RYERSON & SON, INC.

Ryertex Division, Plants at: Chicago, Milwaukee, Detroit, St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.

Electronic Air Filtration

HARRY J. NOLES, Application Engineer
American Air Filter Company, Inc.

▶▶▶ HOW DIRTY is the air in a paper mill and to what extent does it affect production and the quality of the finished product? The character of dust in any industrial district varies with the type of manufacturing and the nature of the materials being processed. An analysis made by the Research Department of the American Air Filter Company, Inc., of a dust sample from a larger paper mill shows:

	Per cent
Smoke carbon (soot)	40-44
Fibrous matter	25-27
Siliceous matter	20-23
Other materials	8-10
Miscellaneous	5-7

A dust sample from the Pittsburgh District analyzed in the same manner shows:

	Per cent
Smoke carbon (soot)	44-48
Siliceous matter	40-45
Coal dust	2½-3½
Fibrous matter	3-5
Miscellaneous	5-8

These two dust analyses show that a paper mill is no better off than a factory in Pittsburgh from the standpoint of smoke carbon. But it is these tiny smoke particles that "gray" a whole day's production of a mill or cause "off-color" finishes. While a high percentage of the soot content can be removed from the air with a mechanical air filter it was not until the advent of the electronic air filter that it was possible to remove smoke particles.

Electronic air filtration is a method of removing entrained solids from air or gases by means of electrical attraction. It is based on the principle that an electrically charged dust particle will be attracted to a charged electrode of opposite polarity and repelled by one of like polarity.

With this development, high efficiency dust removal was extended into the realm of smoke and air-borne impurities so small that, like smoke, they defy the laws of gravity and respond to the Brownian movement. Such microscopic materials are considered permanent atmospheric impurities since

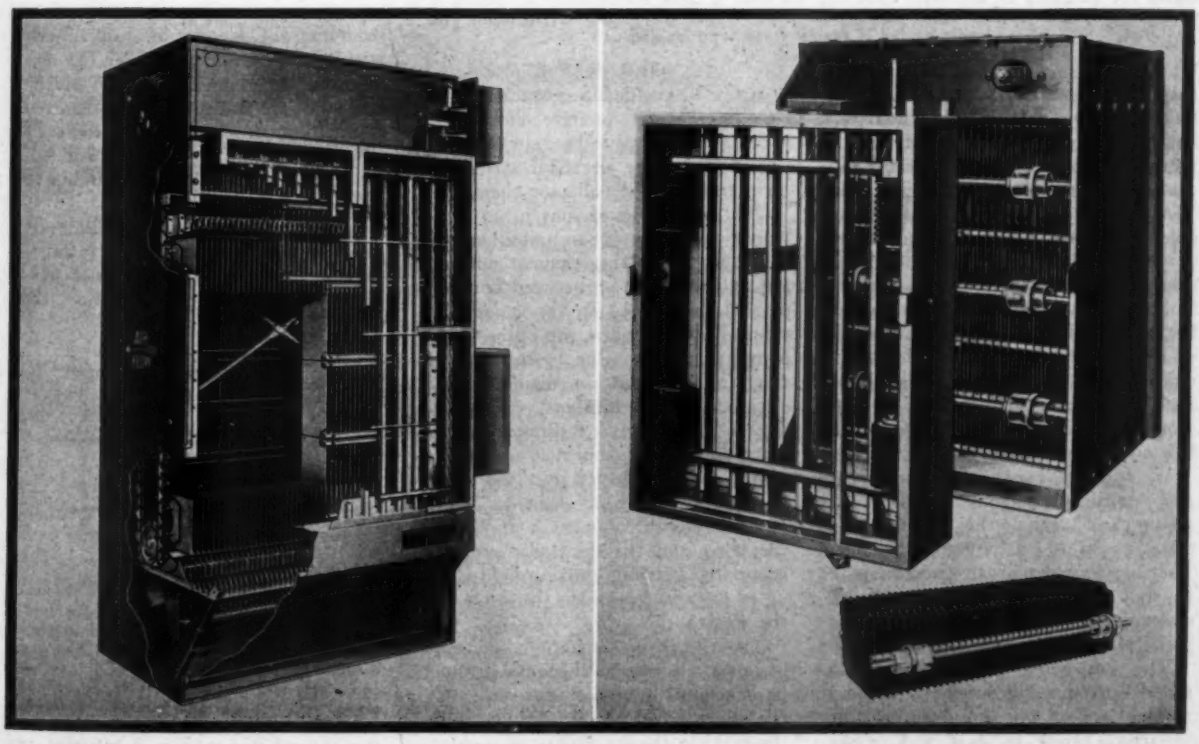


Fig. 1 (left)—Cutaway view of a fully automatic self-cleaning electronic air filter, showing details of ionizer, negative grounded plate assemblies mounted on two endless chains forming a continuous movable curtain, Viscosine reservoir, wipers, and stationary positive charged collector plates. Fig. 2 (right)—Electronic air filter with removable collector plate assembly designed for easy installation and maintenance. Illustration shows collector plate assembly removed. By using two sets of these assemblies machine need not cease operation and dirty plates can be cleaned when convenient as to time and location of sewer and water connections. Ionizing unit is shown set out from the filter.

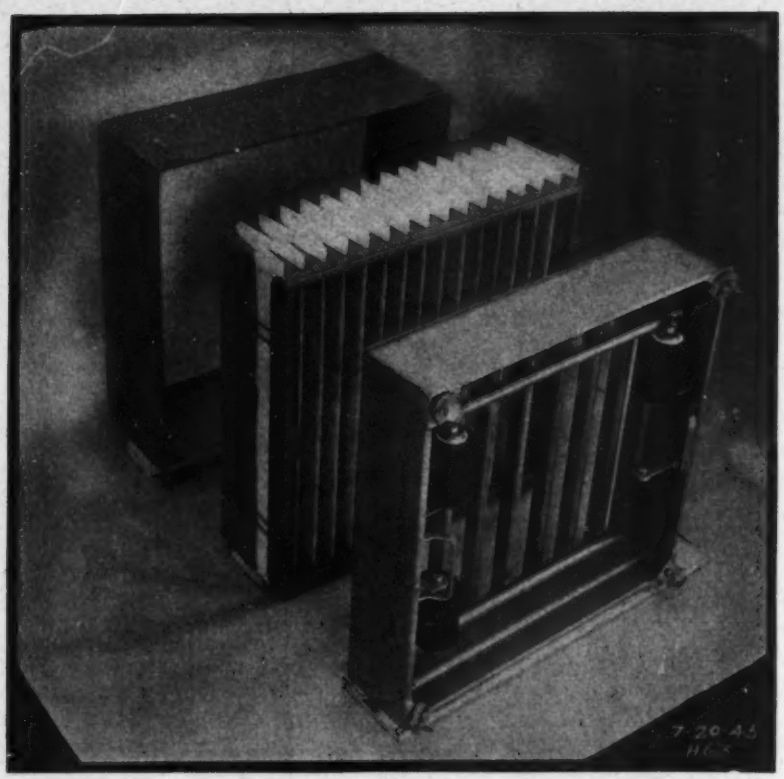


Fig. 3—An electronic air filter using paper as the filtering media which is electrified causing cellulose fibers to stand out like bristles on a brush which in turn catch the dirt and do not impair the efficiency of the filter. Reloading the filter is done mechanically by turning a crank on a special machine which places fresh paper in the filter. From left to right, cell, filter media loaded in special frame, and ionizing unit

they tend to remain suspended almost indefinitely in the air. Fortunately, however, they settle—possibly by thermal or electrical precipitation, becoming smudge and discoloration.

All substances are made up of molecules composed of one or more atoms of the 92 basic elements—carbon, iron, sodium, oxygen, etc.—in various combinations. The atom, according to the present-day concept, is made up of tiny electrical particles called electrons. These electrons, which are negative particles of electricity, revolve around a nucleus of positive protons like a miniature solar system.

If, for any reason, some of these tiny swirling electrons are deflected from their orbits, this infinitesimal solar system is no longer in balance. The displacement of an electron in a gas molecule causes the polarity of the molecule to become positive and it is then called a molecular ion.

The ion being positive tends to travel toward grounded surfaces (which are of opposite polarity) or to attach itself to dust and smoke particles, giving these particles a surface charge of positive polarity. In electronic air filtration, it is necessary to produce ions in sufficient quantity to assure all the dust and smoke particles receiving a positive charge of optimum intensity to be drawn out of the air stream by electrical attraction upon entering the collector element.

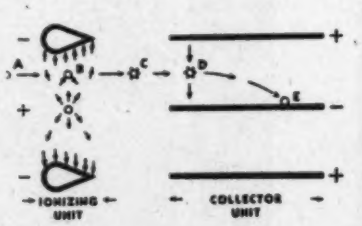
The production of ions in an electronic air filter is accomplished by means of an ionizing element consisting of fine wires equi-spaced between parallel electrodes. In the ionizer developed by American Air Filter Company's engineers, the wires are of tungsten, .008 in. in diameter—the electrodes are streamlined shapes designed to minimize resistance to air flow, eliminate turbulence and assure a uniform air velocity over the entire area of the collector element. With 12,000 volts direct current applied to the wires and the electrodes properly grounded, a strong ionizing field is set up in the space between the wires and the electrodes.

The theory of ionization, like that of most electronic phenomena, must be developed by conjecture since only the effect is perceptible—causes being shrouded in the invisibility of molecular space. Assuming the presence of free electrons in the air, these electrons are liberated by several forces, including ultraviolet light, radioactive material, cosmic rays, and temperature changes. Once liberated, being negative in character, they are attracted to the ionizing wires. Due to the highly stressed electrical field in the area, the speed of the electrons increases rapidly as they approach the wires causing them to collide with the gas molecules. This action is manifest as a corona, visible in the dark as a pale green glow.

The gas molecules from which an electron has been removed become positive molecular ions and migrate to the grounded electrode which is of opposite polarity. Soon there are myriad electrons flowing to the wires and ions traveling to the electrons. The space between the wires and the electrodes is then said to be "ionized."

Normally, the components of a self-cleaning electronic air filter are so completely enclosed that it is impossible to describe the details of construction without a cutaway illustration (Figure 1). Since the bulk of the dust and smoke is deposited on the grounded collector plates, these assemblies are mounted on two endless chains to form a continuous movable curtain. This arrangement permits the grounded plates to be rotated through an oil bath in the base of the filter casing for cleaning and recoating with Viscosine. A wiper in the reservoir squeeges the oil soaked plates, thus removing the deposits of dust as well as the tarry residue of smoke. The dirt removed settles to the bottom of the reservoir as sludge to be removed manually with a scraper or automatically by draining off the oil and removing the sludge by centrifuging or sedimentation.

In some instances, the air filtration problem does not justify the installation of a sizable fully automatic self-cleaning electronic filter—hence, the



Two-stage precipitation: (A) Dust particle carried in air stream enters ionizing unit. (B) In passing through ion field it is bombarded with ions traveling from charged wires to grounded electrodes. (C) Ions become attached to dust particle as surface charge of positive polarity. (D) Entering electrostatic field of collector unit, the positive charged dust particle is attracted to negative plate and repelled by positive plate. (E) Upon touching negative plate the dust particle gives up its charge but is held in place by viscous coating. (The "how it does it" of electronic air filtration)

development of a unit (Figure 2) with removable collector plate assemblies which has made possible a number of innovations in construction that simplify installation and assures competent maintenance. This filter offers the advantage of sectional rather than unit construction, with full-height ionizers. The positive and negative collector plates are assembled on cross rods and accurately spaced to form horizontal groups which are easy to handle and may be readily removed from the filter casing. With the negative plate assemblies being supported on horizontal guide rails, attached to the vertical side plates, they slide into the casing in much the same manner as a desk drawer. Likewise, they are grounded to these side plates through their contact with the guide rails. The positive plate assemblies are supported on two bayonet-type connectors at the rear of the filter and by insulated latches of special design at the front. These connectors make sweeping contact with vertical bus bars and rest on aligning pins through which the positive plates receive their charge.

In the latest type of electronic air filter to be developed (Figure 3), the collecting element is electrostatically charged paper of a special texture which has been given the trade name of "Airmat." It has been found that when cellulose tissue is placed in an electrostatic field, each individual fiber becomes a collecting element. Not only is the efficiency of the field materially improved through the use of the tissue, but it can hold much more dust without a proportionate increase in resistance. Each tiny cellulose fiber stands out like bristles in a brush with the result that much of the dust is suspended on these fibers and does not obstruct the air passages in the Airmat sheets. The filter is constructed in units from two to six feet in height with removable ionizers and is so designed that either "V" type or bank type installations can be made. On installations requiring a height greater than six feet, the sectional type construction is most advantageous and full-height hinged ionizers are used to assure maximum efficiency.

The ease and convenience of maintaining this newest type of electronic air filter is readily apparent since it requires neither water nor sewer connections for cleaning, and it is not necessary to coat the collecting element with oil to maintain its efficiency. When the Airmat paper has accumulated its dust load, it is removed and replaced with clean material. This replacement is accomplished by the turning of a crank in a mechanical loader.

Notwithstanding the advances that have been made in the science of dust engineering during the past 25 years, the future undoubtedly will contribute further improvements. The pape industry—thanks to electronic air filters—now has access to equipment that will meet the most exacting standards for super-clean air in the making of truly fine papers of unexcelled whiteness, brilliance, or delicacy of color.

•

New Paper and Pulp Law Suits

LEO T. PARKER
Attorney at Law

▶▶▶ THE HIGHER COURTS recently rendered several unusually interesting and informative decisions involving paper and pulp mills. Obviously, knowledge of these new legal controversies will assist readers to avoid similar law suits. Also, these new and modern citations can be used advantageously to win unavoidable suits. Therefore, the hereinafter citations should be filed for future possible use.

Release Held Void

Considerable discussion has arisen from time to time over the legal question: When is a release valid which relieves an employer from paying further compensation or damages to an injured employee? The answer is: When the employee fully understands *what* he is signing and the release complies with requirements of state laws.

For illustration, in Rickle vs. Wyoming Valley Paper Mills, 38 Atl. (2d) 78, reported August, 1944, it was shown that an employee in a paper mill sustained an injury consisting of an abrasion on his right shin bone. This abrasion was slow to heal, and an ulcer ultimately developed.

The employee signed two contracts "releasing" the company from further payments for the injury. In the first release the consideration named therein was the sum of $100.28 and the payment of a doctor's bill not to exceed $90. This settlement was based on the assumption that the employee would fully recover from his injury within a fortnight. The assumption proved to be unfounded. Three months later the employee submitted to an operation and three weeks later signed another release acknowledging the receipt of $300.28. Each release was in printed form, and comprised over three hundred words. Most of the phrases are technical, and their precise legal import would not, in all probability, be apparent to a person in the employee's position.

Later the employee filed suit and asked the court to cancel both releases. The employee's injury had become more severe and serious than expected when the releases were signed, and the employee testified that he *thought* he would receive more compensation. Therefore, the higher court cancelled and held void the releases. This court said:

"A written contract cannot be set aside merely because one of the parties to it put an erroneous construction on the words in which it was expressed; but this principle does not apply to a case where a mistake by one of the parties as to the meaning of the words used has been induced, however innocently, by the other party."

Option Not Taxable

It is well established law that all persons who receive compensation for services rendered must report such income in Federal tax returns. However, a recent court has held that if for services rendered a person receives an *option* to purchase stock at a profitable price, he is not compelled to report this profit in his income tax returns.

For instance, in Smith vs. Commissioner of Internal Revenue, 142 Fed. Rep. (2d) 818, reported June, it was shown that a contract was made between an Oregon corporation and the Hawley Pulp and Paper Company which provided that as compensation for managing the latter company the Oregon company should receive 174,378 shares of common stock in the paper and pulp company. Later, the Oregon company gave one of its employees, named Smith, an option to purchase 74,377 of the 174,378 shares of common stock at a price of

$7,437.70. Smith exercised his option by paying the Oregon company $7,437.70. These shares at the time of their delivery to Smith had a fair market value of $84,397.50. Thus, at the time of their delivery to Smith, their fair market value exceeded their cost by $81,021.60. The Federal Tax Commissioner held that the excess ($81,021.60) was compensation for Smith's services, hence was income to him and should have been so reported in his income tax return.

Smith appealed to the higher court which reversed the verdict, and said:

"The option was granted him as compensation for service, but the option was not stock or the equivalent of stock. In order to acquire the stock, petitioner had to purchase it, and did purchase it."

Compromise Agreement Valid

Modern higher courts consistently hold that a valid contract may be made to compromise a disagreement. Such as contract is valid and binding on all parties of interest, unless one party was fraudulently induced by the other to make the compromise agreement.

For illustration, in Nahtel Corporation vs. West Virginia Pulp and Paper Company, 141 Fed. Rep. (2d) 1, reported May, 1943, the Nahtel Corporation sued the West Virginia Pulp and Paper Company to recover the balance due of $1,290,000 on a contract. The agreement provided for the liquidation of various corporations and the disposition of the proceeds.

It was admitted that the pulp and paper company was not a direct party to the contract, but Nahtel contended that the former automatically made itself liable because the company which made the original contract was the pulp and paper company's agent and that this fact was not disclosed.

However, the testimony proved that before the suit was filed Nahtel had entered into a settlement or compromise agreement with the company with which originally he had made the contract. In this agreement it was specifically mentioned that the pulp and paper company was being released from future liability. Therefore, the higher court held the latter not liable.

Use of Property

Modern higher courts consistently hold that all property owners must exercise reasonable care that property is used and managed so that it will not cause injury to employees or other persons. However, the courts hold that a property owner who invites or causes other persons to come upon his premises is *not* an insurer against every possible accident. He must exercise merely such care as a reasonably careful and prudent person would exercise to guard against dangers under the same or identical circumstances. In other words, it is only when there is some *concealed* peril, known to the property owner but *not* known to the person injured that he will be held responsible.

Another well settled principle of law is that all persons who come upon private property must use reasonable care to take notice and protect himself against obvious dangers.

For illustration, in Le Vonas vs. Acme Paper Board Company, 40 Atl. (2d) 43, reported February, 1945, it was shown that the Acme Paper Board Company made a contract with an independent contractor to repair building. This independent contractor supplied his own employees to do the work. One day while moving steel beams by means of a crane, with a boom 70 feet long, a beam contacted a high voltage power line and seriously shocked two employees of the contractor. These employees sued both the electric company, which owned the power line and the Acme Paper Board Company for heavy damages. In holding the employees not entitled to recover damages, the higher court said:

"The law does not require that a person, who maintains even so deadly an instrumentality as a high voltage electric wire, shall anticipate at his peril every possible fortuitous circumstance under which some person might make a contact with the wire, resulting in injury or death . . . When a person undertakes work which exposes him to obvious dangers which he knew or had the opportunity to know, he must be considered as having assumed such risks, and he cannot recover for any injuries resulting therefrom."

Another interesting point of law involved in this case relates to liability for injuries to employees of independent contractors. In this respect the higher court explained that if a property owner employs an independent contractor to do certain work, he owes to employees of the contractor reasonable care to furnish them a safe place to work. In other words, liability for injuries to an employee of an independent contractor rests upon the property owner only when the injuries arise out of the abnormally dangerous condition which is concealed and of which such employee has no knowledge or notification. However, if the danger is apparent, the employee assumes the risks and cannot recover damages for sustained injuries.

Legislature Must Authorize

A late higher court held that a company which transports logs by river seeks damages for construction of a dam or other obstruction across a navigable river, the suit arises under the Constitution and laws of the United States and the Federal District Court has jurisdiction. However, if the stream is non-navigable and the Federal Government does not own nor operate the dam the complainant must seek damages from the state legislature.

For instance, in Northern New Hampshire Lumber Company vs. New Hampshire Water Resources Board, 56 Fed. Supp. 177, a suit was filed by a company which owned a large quantity of timber, wood and pulp. The company filed the suit against the New Hampshire Water Resources Board for damages for constructing a dam across a river which obstructed transportation of pulp logs by river in interstate commerce.

The testimony showed that the Federal Power Commission decided that the river at the site of the dam was a non-navigable waterway. Therefore, since no state law authorized recovery of damages the higher court held that instead of suing the state's agency the company's remedy was by petition to the state legislature.

Suit Improperly Filed

The law requires that where a citizen of one state sues a corporation of another state the suit must be filed in the District of a Federal Court where the corporation was created or incorporated.

For instance, in Robinson vs. Coos Bay Pulp Corporation, 147 Fed. (2) 512, reported May, 1945, a broker sued the Coos Bay Pulp Corporation for commissions amounting to more than $3,000 on certain sales. The broker is a citizen of New Jersey and he brought suit in a federal court against the pulp company, a corporation incorporated under the laws of the State of Washington. The notification of suit was served on the pulp company's official at his branch office in Pennsylvania where it transacted interstate business.

Since neither the plaintiff nor the defendant resided in that district of the federal court the suit was vacated.

On the other hand, this court held that if the pulp company had transacted intrastate business in Pennsylvania, the suit would have been properly filed.

This court explained that although a corporation, which appoints a general agent in a *district* other than that in which it is created, does not waive its right to insist that suits against it

must be filed in the district where it is incorporated.

Law of Patents

Technically, a patent protects the inventor of a new thing, device, or process against its unauthorized use by *all* other persons, corporations and firms.

It is well to know that *no* patent may be obtained on (1) a principle known to science; (2) a mere result; (3) a property of matter; (4) an aggregation of old parts which do not act together to produce a *unitary* result; (5) a system for doing something; (6) things having an immoral object; (7) things operated by "mechanical skill," and which do not require "inventive ability" to perfect; (8) all devices that are inoperative and impractical; (9) all devices that are not new and useful; (10) and all other things which have been described in any publication, or patented in this or any other country.

For example, in Milne, 140 Fed. (2d) 1003, it was shown that an inventor filed an application for a patent on a "Pulp Flow Distributors for Paper-Making and Board-Making Machines." The invention comprised a flow distributing box containing spaced baffles between the inner and outer walls. A board was positioned horizontally from the flow box and intended to co-operate with an adjustable baffle to form an adjustable outlet at or near the forming wire. However, an old British patent, 469,-203, disclosed a papermaking machine which included all of the elements except the baffle. And other prior patents disclosed other elements, or parts of the invention. These patents are Austrian Patent, 70,796; Wood, United States, 1,866,607; Bell-Irving, United States, 1,909,150; Milne (Brit.), 469,203; Baxter, United States, 2,156,445; and Milne, United States, 2,205,693.

Therefore, the Custom and Patent Appeals Court refused to allow or grant a patent on the new invention.

Patents Anticipated

All patents are void which relate to inventions not new and useful.

For example, in Process Engineers vs. Union Bag and Paper Company, 62 USPQ 459, it was shown that the Union Bag and Paper Company was sued by Process Engineers for infringement of the latter's two patents, 1,558,845, and 1,589,947. Both patents relate to the manufacture of paper and particularly to the method of sizing the "cellulose fibers" of which paper is made. This method consists in withholding the precipitation of rosin until after the beating action of the jordan engine is complete. In other words, the size in the stock is coagulated after the stock has passed through the jordan engine.

It is interesting to observe that the Supreme Court of the United States held both patents invalid and not infringed because, among other reasons, the invention involved only "timing" of steps in the process, and other older patents disclosed the same steps although a different sizing material was used.

Also, see 64 USPQ 501, where the patent involved a method of hydrating cellulose fibers which consists in heating the fibers in both beater and jordan machine while in an *alkaline* condition.

Since other older and prior patents both in this country and other countries showed similar inventions, the Supreme Court of the United States held the claim invalid. Also, the claims 1 to 4 were held invalid and claims 2 to 4 not infringed. The number of this patent is 1,580,814.

And, again see 64 USPQ 464. The patents involved in this litigation, 1,753,775, and 2,041,285, were held invalid and not infringed.

One of these patents involved a method of sizing paper which consists in treating the paper fibers with sulphate of alumina and allowing the fibers to absorb the alum until the *p*H is over 5 and then treating the fiber with solution of rosin size.

The other patent involved a process of adding a stream of sizing emulsion to slightly acidified or neutral pulp to mix the materials as they pass to the machine chest. The alum solution is added continuously to the machine chest.

Dam Washed Out

Often the question has been asked: When is an upper riparian owner liable for flood damage to a lower riparian dam owner? The answer is:

No matter how much damage a lower riparian owner may have suffered by reason of the overflow of water he cannot recover damages from an upper owner if the water for any reason, flowing upon and over their lands, was *not* more than would naturally and necessarily have been cast upon their lands if there had been no dam.

For illustration, in Rockford Paper Mills, Inc., vs. City of Rockford, 18 N. W. (2d) 379, reported June, 1945, it was shown that the Rockford Paper Mills, Inc., owns a mill, land, and dam. The company used the water from its dam in making paper products and also in generating power to operate its beater room. The company dam, due either to original construction or wear and tear or both, was not in good condition. Two miles above the dam on the same river was another dam belonging to the city of Rockford.

On March 15, due to the breaking up of the ice and the melting of the snow, a very large volume of water came down the Rogue River. In addition to this, on March 15 and 16, there was a rainfall of 1.83 inches, the heaviest recorded.

The city officials became apprehensice as to what would happen to the city dam, because of the pressure of excess water, and gradually opening the gates of the dam. This sudden onrush of impounded waters caused a tremendous flowage so that the paper company's dam went out, its property was inundated with water and its machinery very hadly damaged.

The paper company sued the city for $50,000 damages. The higher court refused to hold the city liable, and said:

"The water that went past defendant's (city's) dam was the excess amount that came down the river . . . To hold them (city) responsible, there must be negligence or some intention on their part to suddenly release impounded waters so that damage to the lower dam will follow. They cannot be held responsible for a superfluity of waters coming from a flood condition arising above their dam without any negligent act on their part."

Broker Sues for Commission

It is well established law that a real estate broker may sue and recover agreed commsisions for assisting in either purchasing or selling real property. However, if the broker relies upon a "verbal" agreement he cannot recover payment of commissions unless he proves his employment as broker, the exact employment terms, his performance of the contract and the amount of commission earned and payable under contract at the time of the trial.

For instance, in Brown Paper Mill Company, Inc., vs. Irvin, 146 Fed. (2d) 232, reported January, 1945, a real estate broker sued the Brown Paper Mill Company to recover $13,341 his broker's commission of 25 cents an acre on the purchase by the paper company of 53,363.27 acres of Arkansas timber land

The broker testified that an official of the paper company had *verbally* promised to pay this commission if he assisted in purchasing the land.

Although the lower court rendered a verdict in favor of the broker, the higher court reversed the verdict, saying that the broker failed to positively prove all of his assertions.

Combining or Laminating Machines—

Their Design and Application

FRANK W. EGAN, Vice President
John Waldron Corporation

▶▶▶ SOME YEARS AGO, it was the custom to refer to the process involved in the combining or laminating of sheets of paper or board as pasting. At that time, pasting was a good name for the operation because it actually designated the kind of job that was done.

Paste was prepared and thinned down so that it could be distributed easily; and a paster unit, like that shown in Sketch 1 or 2, was used for making the application. If the webs or sheets did not adhere by passing through a single nip of rolls, then a multiple arrangement of roll nips was used to develop a bond between them.

The number of nips was stepped up until some of the water in the thinly distributed paste was absorbed by the body stock leaving the solid content in the paste on the combining surfaces of the paper to develop the bond. No thought was given as to the factors that developed the bond, or that produced a curl in the pasted stock—conditions that made for an unsatisfactory product both from the standpoint of rigidity and of printing.

A review of some of the pasting machines or combiners that have been and are being used follows:

Sketch 1 shows a rather crude sheet paster which is used to laminate two sheets of paperboard. Rolls "A" and "B" are usually rubber-covered. Paste is fed to the top of roll "A" from a supply vessel placed above it. Roll "B" picks up paste from the paste pan. The operator feeds two sheets of board from the feed table into the nip of the rolls, and strings carry them through without letting them pick up paste between the two sheets or adhere to the rolls. The sheets are stacked on skids, and the bond between them is developed there by the application of weights.

Another type of sheet paster is shown in Sketch 2. In the operation of this machine, a sheet of board is pasted to a web of paper and the laminated web cut by a revolving serrated knife. As a rule, the diameter of the paste rolls is incorrect, applying roll "A" being large in diameter, and doctor roll "B" being small in diameter. Both of these rolls should be of the same diameter. To overcome the handicap of a smaller diameter doctor roll than the applying roll, a thin paste is run. Such a paste requires a series of laminating rolls "D" for making the bond. Even with this series of rolls, after the pasted sheet leaves the paster, the paper can be stripped from the board because of the excess water in the paste. This type of sheet paster produces a product that curls due to the tension applied to the web of lining paper and to the excess of water in the paste.

The sheet laminator in Sketch 3 has an arrangement which will apply a web of paper to one or both faces of a sheet of paperboard. Pastes containing 50 to 65 per cent solids can be used without springing the applying rolls. Such a high solids content is possible because one set of rolls metering and applying the adhesive operates in reverse direction to the other, thus permitting the use of straight face metal rolls ground to a tolerance of .0001-.0002 in.

The reverse rotation of these rolls eliminates adhesive metering pressure at the nip of applying roll "A" and doctor roll "B," and furnish roll "C" can be rotated at ¼ to ⅓ of the speed of the applying roll. The rolls "A" and "B" also can be operated in the direction opposite to the travel of the web of paper. In such a case, furnish roll "C" is positioned beneath applying roll "A" as shown in Sketch 3A.

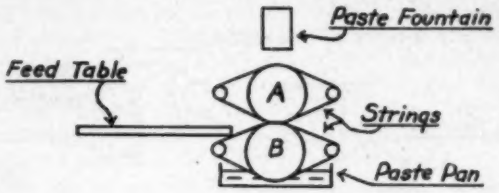
Sketch 4 shows a simple type of paster in which the fountain for the paste is placed between the rolls. The fountain is made up of side and end dams that are fitted to the roll faces. Known as the Holyoke paster (because of its wider use in the city of Holyoke and environs), this paster uses medium or viscous pastes. In operation, it does not apply the pastes uniformly.

Sketch 5 shows a web laminator that is used to combine aluminum foil to paper or paperboard. With this laminator, the adhesive is applied by kiss application—a good form of application as the applying film splits twice, first at the nip of rolls "A" and "B," and second as the web leaves the face roll "A." Doctor roll "E," driven in the same direction as the web and at one-tenth the speed of the web, reduces the coarse ribs formed by the larger angle of tangent to the face of roll "A." Through the use of a third roll (not shown), spot or stripe laminating can be accomplished. This type of laminating is used in producing lined wadding for candy and cigar foil, glassine-lined wrappers.

A compact arrangement of a two web laminator is shown in Sketch 6. The paste rig in this arrangement is simple in design. A double nip also permits the splitting of the applying film twice. The adhesive is fed to the nip of rolls "A" and "B" from a fountain made up of side and end dams machined to fit the face of the rolls. Roll "C" is a rubber covered roll and is carried in bearings which are fitted with a cam drawback attachment. In the laminator section, roll "D" is a heated roll—roll "E" is rubber covered and supported in bearings with a quick lift unit. This laminator, used to combine treated liners to capboard, will operate at 400 feet per minute.

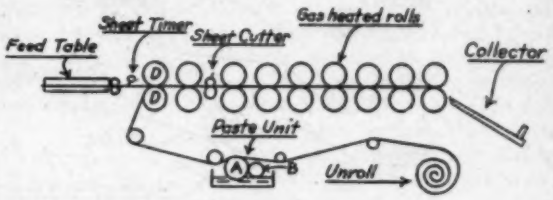
The two-web laminator illustrated by Sketch 7 will combine Cellophane to paper or paperboard. The reverse roll application of the adhesive is the same as in Sketch 3A. The arch in between the adhesive applying unit and the laminating section prevents wrinkling of the Cellophane and the length of travel permits the solvent to evaporate. A double-drum winder is used in place of the center winder. This arrangement is an asset. In fact, a double-drum winder can be used as a laminator if a driven ironing roll is used to start the operation. As the winding roll increases in diameter, the ironing roll must be raised. This procedure is necessary because of the varying diameter of the winding roll from one end to the other—a condition brought about by the varying caliper of the combined web.

The laminator (Sketch 8), arranged for two webs, can be used to combine glassine or other webs not so ab-



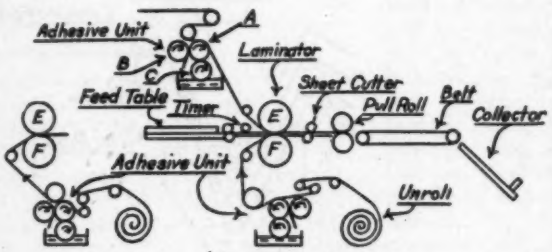
Sheet Paster

Sketch #1



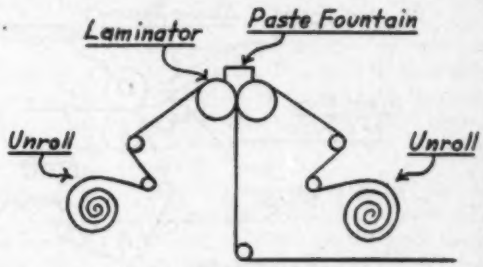
Sheet Paster

Sketch #2



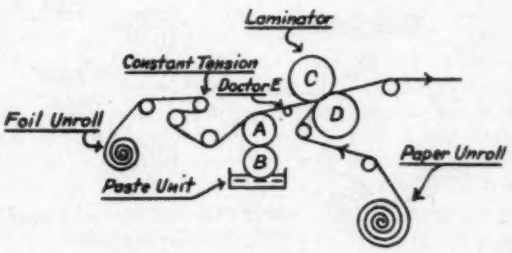
Sheet Laminator

Sketch #3A Sketch #3 Patent Pending



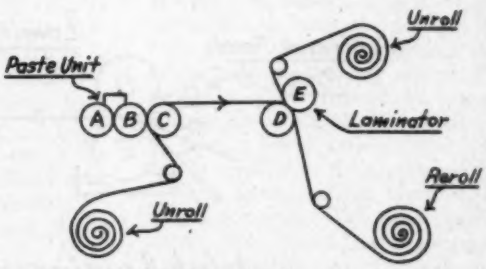
Holyoke Paster

Sketch #4



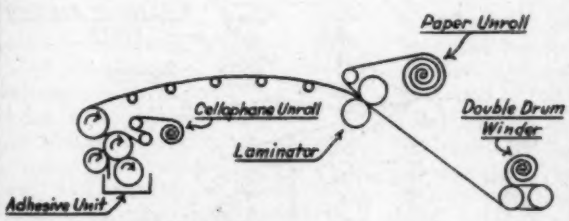
Web Laminater

Sketch #5



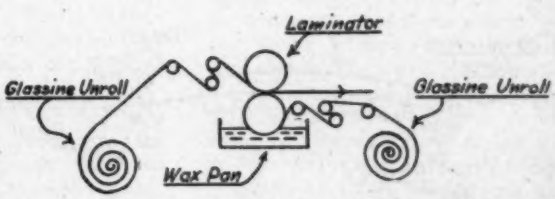
Web Laminator

Sketch #6



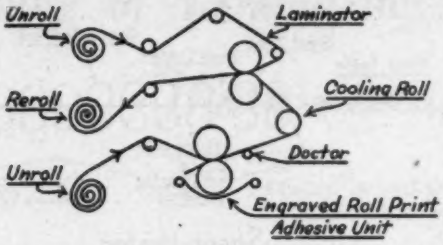
Web Laminator

Sketch #7 Patented



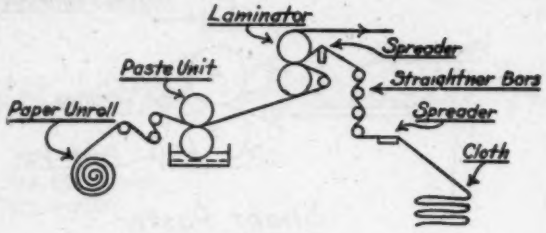
Web Laminator

Sketch #8



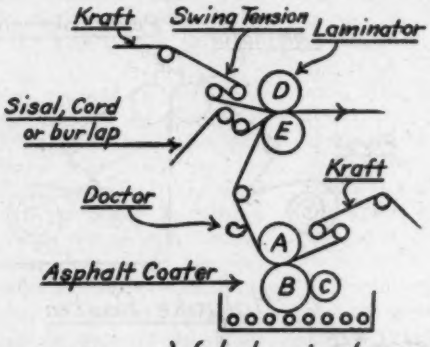
Web Laminator

Sketch #9

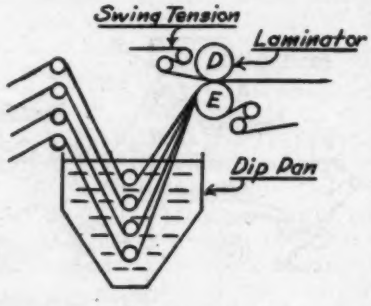


Web Laminator

Sketch #10

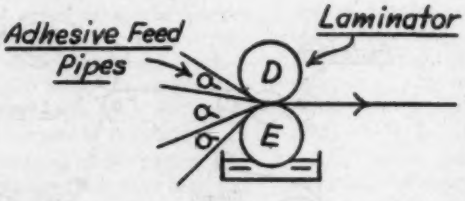


Sketch #11 . Web Laminator



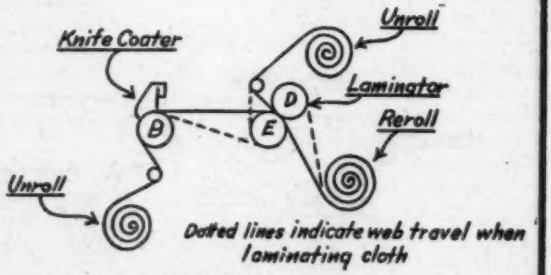
Web Laminator

Sketch #12



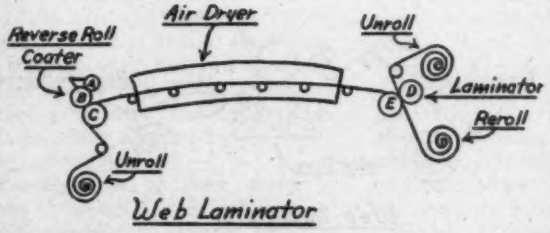
Web Laminator

Sketch #13



Web Laminator

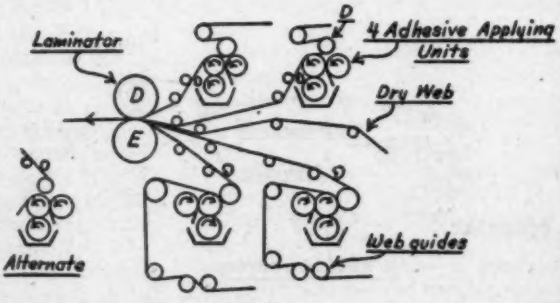
Sketch #14



Web Laminator

Sketch #15

Patented



Web Laminator

Sketch #16

Patent pending

sorbent. The lower web hugs the bottom roll, thus picking up the adhesive from the pan and carrying it to the nip of the rolls where it is metered. The combining operation is similar to that of the Holyoke paster (Sketch 4), the only difference being in the use of the pan instead of the fountain.

Adhesive can be metered by means of an engraved print roll (Sketch 9). The engraved roll has the advantage of metering the same amount of adhesive regardless of the speed of the machine, the depth of the engraving determining the amount of adhesive applied to the web. Over a period of time, the doctor blade will wear the engraving and in so doing decrease the amount of adhesive applied. This wear can be lessened by chromium plating the engraved roll.

Sketch 10 shows a two-web laminator used to combine paper or Cellophane to cloth. A two-roll vertical type of adhesive applying unit is used to apply the adhesive to the face of the paper or Cellophane, the cloth being fed to the combining section through straightening bars and double spreaders. The combining rolls are set for either pressure or "S" style laminating. "S" style does not press the adhesive through the cloth. By adding a second paste applying unit, two webs of Cellophane can be laminated with strings fed in between. (The combined product is then slit into ribbons or strings and woven into braid or hat imitation straw.)

An asphalt laminator of the vertical type is illustrated by Sketch 11. This unit is capable of running at a speed of 700 feet per minute. At high speed, roll "B" cannot pick up the asphalt; so roll "C" is run at a slower speed in the reverse direction to throw the asphalt into the nip of rolls "A" and "B." This type of laminator permits the easy insertion of cord from a revolving creel to obtain diagonal reinforcement of the laminated web. Burlap also can be used as the center reinforcement.

Sketch 12 shows a six-web laminator for producing a product made up of laminations of four webs of chipboard and two liners. In the operation of this laminator, silicate of soda usually is used as the adhesive; however, starch adhesives, both converted and unconverted, are also used. The unit is crude in design and expensive to operate.

The laminator in Sketch 13 is similar to Sketch 12. The only difference is that the laminator in Sketch 13 has the adhesives pumped through pipe lines between the webs as they enter the nip of the combining rolls while the laminator in Sketch 12 dips the center webs. To operate laminators of this type (Sketches 12 and 13), the adhesives must be thin or low in solid content, thereby slowing down the laminating operation and at the same time, producing a poor bond.

Sketch 14 shows a knife coater or rubber spreader that is used to apply latex and vinyl adhesives. (In the rubber industry, laminating is known as doubling.) A dryer is generally used between the knife coater and the laminating section. The laminator can be run pressure or "S" style depending on the type of bond desired.

Sketch 15 shows a two-web laminator in which the adhesive applying unit is a reverse roll coater. The reverse roll coater has the advantage of being able to apply an adhesive to the back of carpeting, pile fabric, sandpaper or emery cloth—also strip steel, aluminum foil, Cellophane, Pliofilm, Coraseal, vinyl sheeting, and paper or paperboard regardless of its caliper or surface. The adhesive in the fountain is metered and cast on to the web in the nip of doctor roll "A" and casting roll "B," the roll "B" running in reverse direction to roll "A." These rolls are ground to a tolerance of .0001 in. plus or minus. An air dryer is used to evaporate the solvents to leave the adhesive in a tacky state as it enters the bonding nip of rolls "D" and "E." This coater, designated as the reverse roll coater, is patented.

Having examined a few of the laminators that have been and are being used in various industries, consider the properties that a laminator should have to produce a satisfactory product.

A laminated web must have a good bond, and it must not curl.

Curl can be caused by water and by tension. Water produces a wet curl. Tension causes a mechanical curl.

When combining two webs of similar composition, the ideal procedure is to apply the same amount of adhesive on each web. This procedure provides a balanced condition but two adhesive applying units are required if it is to be followed.

In order to reduce wet curl to a minimum, the solid content of the adhesive should be as high as possible. Adhesives containing 50 to 60 per cent solids can be applied by using a reverse roll adhesive applying unit.

The straight face rolls of such a unit apply a uniform thin film of adhesive regardless of the width of web. They also eliminate metering pressure. Thus, springing of the rolls is prevented.

These rolls also permit high speed operation since furnish roll "C" (Sketch 16) can be run at slow speeds to pick up the adhesive and to avoid excessive agitation in the pan. Setting of backing roll "D" (Sketch 16) permits application to be made either by the pressure method or by the kiss method. An alternate roll arrangement of the adhesive applying units is also shown in Sketch 16.

Dry striping wedges are used to keep edges of the web clear of selvage pickup—also to provide for dry stripes at other places across the web where it may be slit into narrow rolls.

Mechanical curl can be controlled if the laminating rolls "D" and "E" are driven so that one roll can be varied in speed with relation to the companion roll. The speed of each web is determined by the product, its caliper, and the radius of the roll it contacts as it enters the nip of the laminating rolls "D" and "E."

By varying the speed of the laminating rolls in relation to each other, the cut off sheets can be made to curl up, curl down, or lay flat.

Another factor that produces mechanical curl is the type of tension units used on each web as it comes to the adhesive applying units. The tension attachments on the parent roll shafts should be sufficiently light to provide only enough tension to prevent the rolls from unraveling. The main tension should be provided close to the adhesive applying units. This tension may be obtained by using a unit of the swing clamp roll type or by using a driven roll run at a lower rate of speed than the combining roll.

With finely metered films of adhesives containing high solid content, steam dryer drums are unnecessary. The use of steam dryer drums destroys the bond between the webs. At the same time it reduces the rigidity of the final web. This latter effect is not so noticeable when handling laminated materials made up of low caliper webs.

All laminated webs to be sheeted should pass directly from the nip of the laminating rolls to the sheeter. If any drying is required, it should be done through the use of heated air. If the correct type of adhesive applying units is used with adhesives having proper characteristics, no drying will be required for even lightweight webs.

Sketch 16 shows a laminator that is well adapted to the combining of from two to five webs. The adhesive applying units of this unit are easily controlled. Likewise, they are capable of handling a variety of adhesives, such as starch, silicate of soda, wax, hot melt, gums, glues, casein, resins, and asphalt.

Lightning Protection of Electric Equipment

E. G. MERRICK
Industrial Engineering Division
General Electric Company

▶▶▶ PULP AND PAPER plants are not peculiarly afflicted with abnormal voltage conditions. They do, however, have their share of problems where electrical installations are concerned—problems to which, fortunately, the general diagnoses and preventive measures are readily applicable.

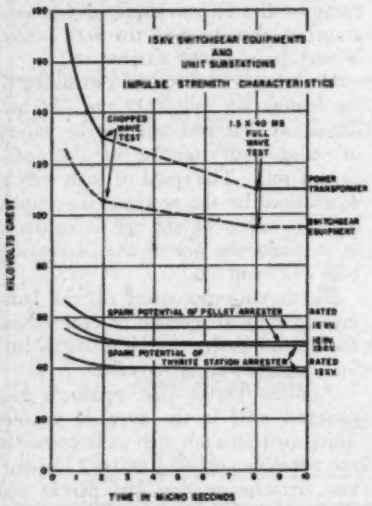


Fig. 1—Impulse strength and protective characteristics for 15-kv. equipment

Abnormal voltages may be due to causes external to the plant, or may originate in the plant's system. In the former case, the transients due to lightning predominate; in the latter case, there are various transients which may be attributable to arc-restriking phenomena during switching operations, arcing grounds, oscillations between system capacitance and inductions, etc.

The characteristics of voltage and current waves due to any of the causes mentioned may be such as to cause damage to electric apparatus unless proper protective measures are taken. That the hazards are very real is evidenced by many apparatus failures in the past—especially those due to lightning.

In recent years, however, much data have been obtained in field and laboratory tests by means of the cathode-ray oscillograph, magnetic links, etc., which make possible a reasonably close prediction of the lightning and other phenomena which may be encountered, the characteristics of various protective devices, and the impulse strengths of apparatus insulation. With these factors known, electric apparatus can now be so designed and protected as to give a high degree of operating reliability.

Lightning Transients

Lightning transients on exposed overhead circuits may be due to either direct or induced strokes. The magnitude of voltage which may appear on lines is mainly limited by line insulation; potentials of 3 million volts have been measured on steel tower lines and of 5 million volts on wood pole lines. Currents in excess of 100,000 amperes have also been observed,

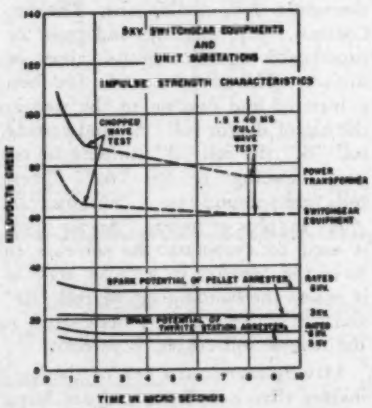


Fig. 2—Impulse strength and protective characteristics for 5-kv. equipment

but accumulated data indicate that probably only a few per cent of the discharges will be in excess of 20,000 amperes.

Effective protection against direct strokes is afforded by properly located overhead ground wires. Protection of line insulation may require such wires throughout the length of the exposed circuit; adequate protection of station apparatus is obtained by ground wires extending out a distance of approximately 2,000 feet from the plan.

Since the product of the lightning current and tower-footing resistance determines the extent to which the tower may be raised above line potential, low resistance is necessary to prevent flashovers across insulators from tower to line.

Additional protection of apparatus against direct strokes is also obtainable from modern lightning arresters which have discharge capacities greater than the currents generally encountered in lightning strokes.

With the hazards from direct strokes minimized, protection of station apparatus is still concerned with "traveling waves" on transmission circuits, due to charges induced by strokes adjacent to the lines on to "chopped" waves resulting from flashovers between conductor and tower or down leads, by operation of expulsion protective tubes, etc.

The voltage characteristic of a lightning transient takes the form of a wave, the voltage rising rapidly to a crest value and decaying more gradually. Measured waves of lightning vary considerably but, since some standard wave must be selected as a basis for the determination of comparative insulation strengths, the so-called 1½ x 40 wave is generally accepted as typical of actual lightning characteristics. This wave can be reproduced quite readily with laboratory equipment, and is usually used for purposes of test and guarantees. It is defined as a wave which reaches its crest value in 1½ microseconds and decays to one-half of crest value in 40 microseconds from zero time.

The magnitude of a wave reaching the station is, as previously stated, limited by the line insulation but it may,

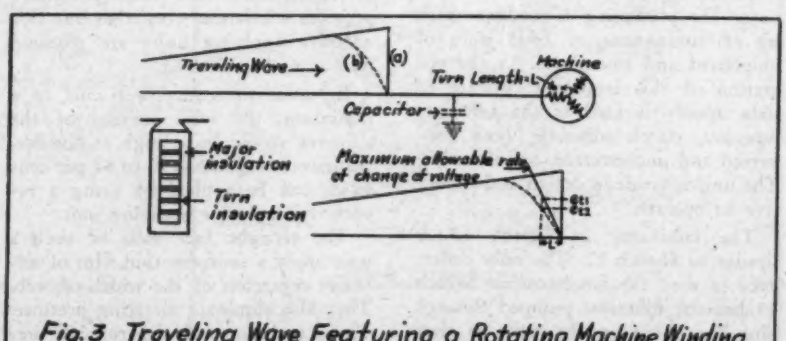


Fig. 3 Traveling Wave Featuring a Rotating Machine Winding

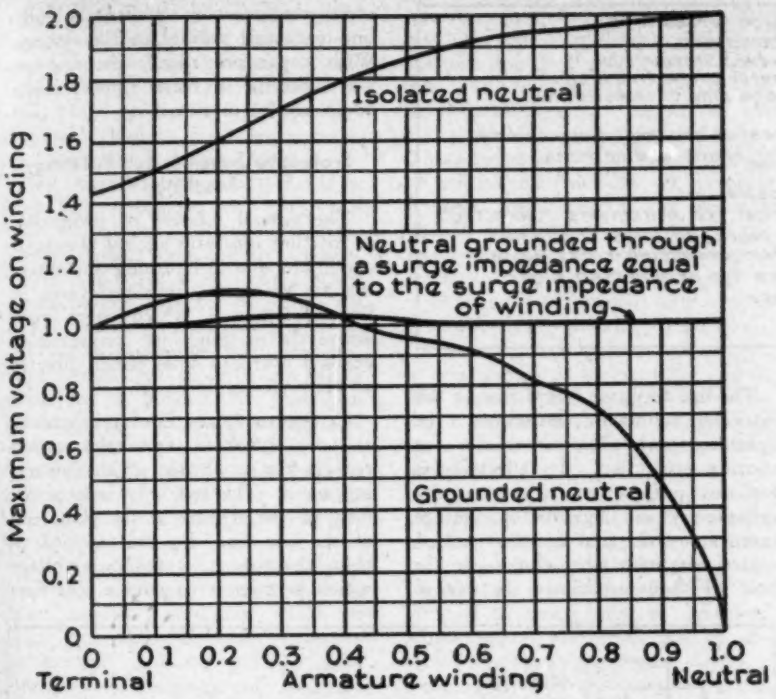


Fig. 4—Maximum voltage-to-ground on a 6,600-volt wye-connected armature winding when a 0.5/150 micro-second impulse wave is applied

however, be reflected at approximately double value. The necessary reduction to provide safety to station apparatus is effectively realized by means of valve-type arresters.

The wave passing the arrester is now reduced to a crest value depending on the sparkover of the arrester gap. As the wave continues into the windings of transformers or other apparatus it is further attenuated, but on reaching the neutral may be reflected at a higher value. If the neutral is isolated or grounded through high resistance, the wave on reaching the neutral will be reflected at approximately double the voltage of the incoming wave, i.e., the voltage to ground may approach twice the voltage held by the arrester; if the neutral is solidly grounded, there is no voltage increased due to reflection. The preceding statement is important, since the method of grounding the neutral of apparatus so greatly affects the voltage stresses to which the apparatus may be subjected.

Transients Due to Causes Other Than Lightning

Even though there is no exposure to lightning, there still may be hazards due to other causes, the most interesting of which are arcing grounds and switching operations under fault conditions or motor starting operations. While the voltage magnitudes from these causes are relatively low compared with lightning transients, they still may be much in excess of the strength of apparatus insulation.

In addition, the waves due to these other causes may also have steep fronts which can cause failure, even though their magnitude does not exceed normal system voltage.

The first two causes mentioned can be eliminated by suitable grounding of the system neutral; motor starting transients can be modified so as to realize necessary protection.

Co-ordination of Insulation

Illustrative of how insulations of plant equipment can be properly co-ordinated to assure desired protection, Figures 1 and 2 show the impulse strength and protective characteristics of 15-kv. and 5-kv. apparatus, respectively. It should be noted that a suitable arrester holds the voltages to values well below the impulse strengths of transformers and switchgear. Cable insulation is similarly protected.

The curves show that at the beginning of the transient, and until the arrester gap sparks over, the insulation is subjected to the rising voltage. Fortunately, however, the ability of the transformers and switchgear to withstand these fast transient voltages of one or two microseconds duration is correspondingly greater.

Co-ordination at voltages above 15 kv. can also be demonstrated.

Effect of Transformers

At one time, it was considered that a transformer completely isolated the secondary circuits from the effects of primary transients. It is now realized that lightning impulses dangerous to low voltage equipment may be transmitted through the transformer by both electrostatic and electromagnetic coupling of the primary and secondary windings, and necessitate suitable low voltage protective equipment.

Rotating Apparatus

Compared with static equipment, the impulse strength of rotating machines is relatively low. From cost and operating characteristic viewpoints, it is impractical to realize the amount of insulation in armature slots which can be applied to static devices. Therefore, it is more rational to adhere to normal machine insulations and to utilize approved external means to give the necessary protection at the lower insulation levels. This protection varies somewhat, depending on whether machines are connected to exposed overhead lines directly or through transformers.

Not only the major insulation from windings to ground but also the turn insulation within coils is involved. Protection of the latter is particularly important, since this insulation may be subjected to voltages of possible 100 to 1,000 times normal operating values.

The "length" of winding to the neutral of a wye-connected machine (or to the mid-point of a delta-con-

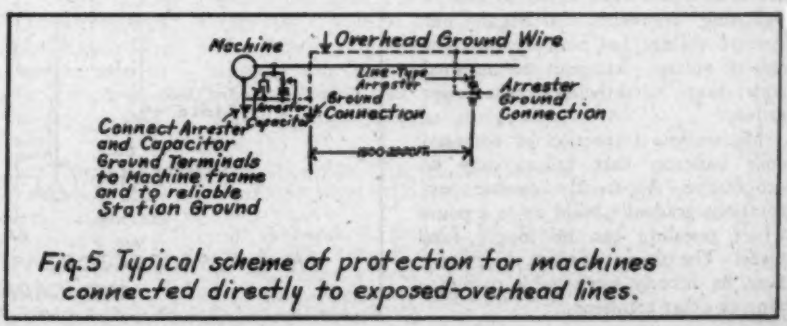


Fig. 5 Typical scheme of protection for machines connected directly to exposed-overhead lines.

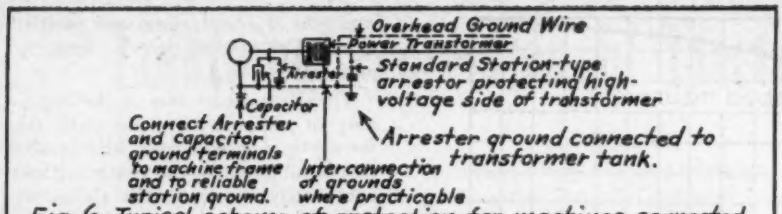

Overhead Ground Wire
Power Transformer
Arrester
Standard Station-type arrestor protecting high-voltage side of transformer
Capacitor
Connect Arrester and capacitor ground terminals to machine frame and to reliable station ground.
Arrester ground connected to transformer tank.
Interconnection of grounds where practicable

Fig. 6 Typical scheme of protection for machines connected through transformers to exposed-overhead lines. Diagram shows arresters and capacitors for protecting rotating machines, and station-type arresters for protecting high-voltage side of power transformer.

nected machine) is expressed in microseconds, i.e., the time for a wave to travel that distance. The turn length is similarly expressed.

Illustrated in Figure 3 is a traveling wave entering a rotating machine winding. While the time required to travel around a coil of length L is extremely small, it is nevertheless a definite value, and resulting voltage between adjacent turns will depend on the length L and the steepness of the entering wave. The maximum rate of voltage change (or wave front) which the coil will withstand depends on the turn insulation and turn length.

If now a lumped capacitance to ground is placed at the machine terminals, it will be charged through the surge impedance of the line. Depending on the charging rate, the front of the wave is more or less sloped off as indicated, changing from (a) to (b) and the turn voltage thereby reduced.

As a wave progresses from the machine terminals to the neutral of a wye-connected machine—or to the mid-point of the delta-connected machine—the voltage to ground across the major insulation changes progressively, as illustrated in Figure 4. The capacitors at the machine terminals serve also to limit the reflections indicated when the neutral is isolated.

Motor Starting

When voltage is suddenly applied to an unexcited motor, as at starting, a wave of steep front enters the winding and produces abnormal voltages across terminal coils, as in the case of lightning transients. Although but normal voltage has been applied, the rate of voltage change in the terminal coils may nevertheless cause turn failure.

Microscopic inspection of damaged coils indicates that failure may be progressive. Apparently minute perforations gradually build up to a point where resealing can no longer take place. The ultimate failure may, however, be directly attributable to lightning or other transients.

The line-to-ground capacitor at the machine terminals, mentioned for lightning protection, serves also for starting protection. Its effectiveness for this purpose was illustrated by cathode-ray oscillograms of voltage taken across the first terminal coil of a particular unit, when thrown on the line. Without capacitors, the voltage across this one coil equalled the full-line-to-neutral voltage of the system. With capacitors added, the voltage wave became a mere ripple which could not be measured.

Protective Schemes for Rotating Machines

The general schemes of protection of rotating apparatus against abnormal conditions due to lightning and starting are shown in simplified form in Figures 5 and 6, which cover cases where the machines are connected to exposed overhead lines either directly or through transformers.

In Figure 5, the line type arrester at 1,500-2,000 ft. from the station reduces the amplitude of the incoming wave. This not only reduces the duty of the arrester at the plant end of the line, but also the capacitor is thus charged at a reduced voltage which permits it to reduce still fur-

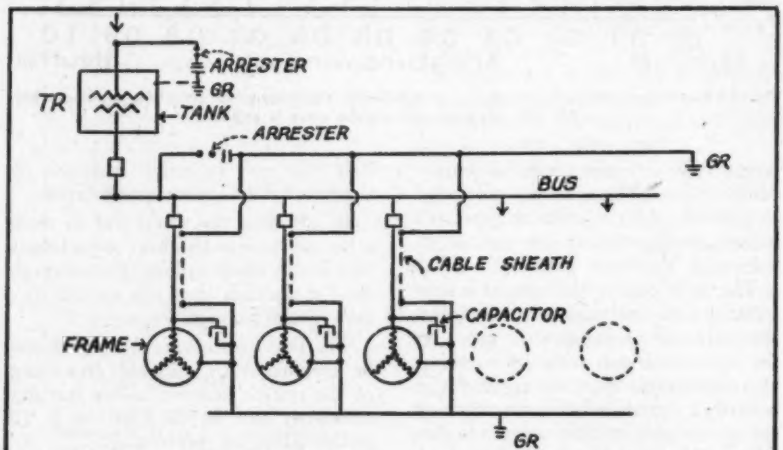


FIG. 7 PROTECTION OF SEVERAL MACHINES WITH COMMON ARRESTOR AND INDIVIDUAL CAPACITORS.

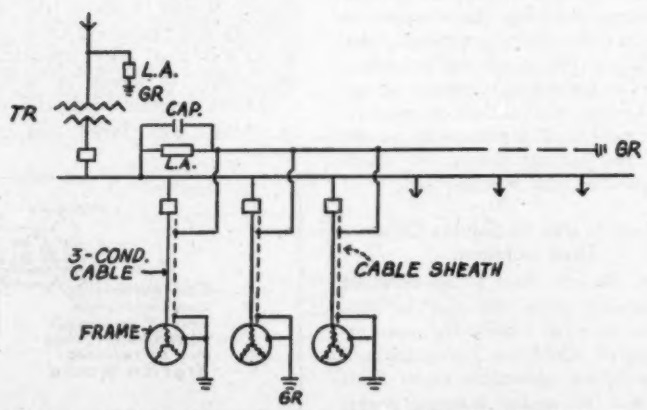


FIG. 8 PROTECTOR WITH COMMON ARRESTOR AND CAPACITOR.

ther the amplitude of the wave reaching the machine. The arrester at—or near—the machine terminals should be of the station type in order to realize low gap sparkover high surge discharge capacity, and hence maximum possible machine protection.

The overhead ground wire should be effectively grounded at each pole structure and also suitably connected to the arrester and station grounds. Where it is feasible, adjacent grounds should be tied together to realize the lowest possible ground resistance.

The station arrester, capacitor, machine frame, and feeder cable sheath should all be bonded and grounded. This assures machine winding and cable protection regardless of ground resistance, since all rise and fall together relative to true earth potential. Low ground resistance is nevertheless desirable for maximum protection of operators who might simultaneously contact a machine frame and some other metallic structure which is nearer true earth potential. The lower the ground resistance and the more effective the bonding of adjacent metallic structures with the station ground, the less will be the hazards from dangerous differences of potential due to lightning and other transients.

Should the station bus be connected to the overhead line through underground cable, the junction of these two circuits of different surge impedance may give rise to wave reflection and voltages dangerous to the cable insulation. An arrester at the junction point is, therefore, desirable. The arrester and cable sheath should be bonded and grounded. If the cable is short, the arrester at the bus may possibly be omitted, the arrester at the junction point, only, serving for protection of the station equipment.

In Figure 6 the primary side arrester gives adequate protection to the transformer and high voltage switchgear, as was illustrated in Figures 1 and 2. The general protection for the rotating machines on the low voltage side again requires both arresters and capacitors.

Figure 6 depicts, diagrammatically, the protection of a single rotating machine. Where a number of units are involved, the cost of insurance due to arresters at the terminals of individual machines may be excessive. Almost equal protection can be obtained—as shown in Figure 7—by a common arrester connected to the bus and individual capacitors at the machine terminals. This is particularly true where the motor feeders are 3-conductor, lead covered cable and the arrester and cable sheaths are bonded and grounded. The terminal capacitor, machine frame, and cable sheath are likewise bonded and grounded. If single-conductor cable is used, the sheath will be grounded at the motor end of the feeder only, since grounding of both ends in this instance would give rise to circulating currents in the sheath.

Where relatively small motors are involved, the cost of individual capacitors may also become excessive. The economics in such cases may dictate a common capacitor also at the bus. This arrangement, shown in Figure 8, gives a certain amount of protection against lightning surges but no protection against switching surges.

How effective rotating machine protection is may be best illustrated by cases where generators or motors have failed repeatedly and, although windings have deteriorated due to both transient stresses and repairs, they have subsequently been protected from further failure by the arrester and capacitor equipment.

It is hoped that this discussion will serve to acquaint operators with the various phenomena described and the probable hazards to electrical apparatus which is not properly protected. The schemes of protection shown are somewhat general and specific cases may require more or less individual treatment.

Isolation and Analysis of Hemicellulose Fractions from Aspen Holocellulose; An Addendum

ERNEST ANDERSON and LOUIS E. WISE
The Institute of Paper Chemistry

▶▶▶ In a recent issue of THE PAPER INDUSTRY AND PAPER WORLD Thomas (1) published details of various fractions obtained from aspen holocellulose. These included an interesting Fraction A, containing over 32 per cent uronic-anhydride, which had been recovered by means of alcohol from the wash waters of the holocellulose preparation. This fraction amounted to at least 1.4 per cent of the weight of the extractive-free wood. Thomas showed that galactans were substantially absent from his aspen sample, but he made no specific tests for galacturonic acid residues which might be associated with pectic material.

It was suggested that Fraction A might contain pectic material, inasmuch as Anderson and his co-workers had shown previously that such material was present in all wood samples examined by them (2). Consequently, the 400-mg. sample of Fraction A (all that was available) was subjected to the Heidelberger-Goebel test (3) for galacturonic acid. This test depends upon the specific action of bromine and hydrochloric or hydrobromic acid on polygalacturonic acid with the formation of mucic acid. When applied to Fraction A, a small amount of a crystalline acid, melting at 218-9 C. was obtained; the melting point remained unaltered when mixed with an authentic sample of pure mucic acid. This indicates that galacturonic acid residues were present, and makes it highly probable that the above mentioned fraction contains pectic material.

1) Thomas B., THE PAPER INDUSTRY AND PAPER WORLD, 27, No. 3:374 (June, 1945).

2) Anderson, E., Seigle, L. W., Kranarich, P. W., Richards, L., and Marteny, W. W., *J. Biol. Chem.*, 121:165 (1937).

3) Heidelberger, M., and Goebel, W. F, *Ibid.*, 74:613 (1927).

German Research on the Use of Sodium Chlorite in the Manufacture of Wood Pulp and Cellulose*

3—THE PRODUCTION OF PAPER PULPS OF MAXIMUM STRENGTH

G. P. VINCENT and J. F. WHITE
The Mathieson Alkali Works (Inc.)

▶▶▶ JAYME'S work on the production of paper pulps of high strength with the aid of sodium chlorite, reviewed in the first two articles of this series (1), led him to make a general study of the factors that determine pulp strength; and he summed up his conclusions in an address delivered before the Society for Cellulose Chemical Engineers at Darmstadt, in 1942 (2).

As he pointed out, it is inaccurate to speak of "pulp strength." What is measured is not the strength of the pulp fibers, which would be difficult to measure because of their short lengths, but the strength of papers made from the fibers. However, when the test sheets are prepared by rigidly following a standardized procedure, any differences in the strength characteristics of the papers will be due to differences in the physical or chemical properties of the pulps used. A knowledge of these properties will, therefore, assist the manufacturer in producing papers suitable for various purposes.

Jayme prepared his test sheets in accordance with the procedure developed by von Ehrenthal, which is similar to the standard American method, as described in TAPPI Standard T205 m-42.

Influence of Fiber Structure on Pulp Strength

Fiber Length. It has long been generally held that fiber length exercises a decisive influence on pulp strength, but this has been found to be strictly true only when the fibers are less than 0.3 mm. long.

With longer fibers, the tearing resistance increases as fiber length increases; but breaking length, bursting pressure, and double-fold resistance are differently affected. As a rule, these last three characteristics increase when the average fiber length increases from 0.3 to 0.9 mm., and then tend to decrease with further increases in fiber length.

For example, Johansson has shown that paper made from Swedish spruce and pine sulphate pulps may have greater breaking lengths and bursting pressures than similar papers made from the corresponding American woods, although the fibers of the latter are considerably longer. In addition, Jayme found that the tearing lengths and bursting pressures of papers made from straw pulps, with average fiber lengths of from 0.3 to 0.46 mm., may be as great as those of papers made from spruce pulps having fibers that average 1.2 to 1.8 mm. long.

In practice, the length of the fibers of a given pulp is controlled in the beater. Prolonging the beating shortens the fibers, which decreases tearing resistance but tends to increase the other three strength characteristics.

Diagrammatic representation of the structure of an Asplund Spruce Fiber, according to Jayme and Wettstein. C—Cellulose nucleus, 44.4% (crystalline area); CP—Cellulose polysaccharide transition zone, 12.8% (containing 2.53% of pentosan); PL—Polysaccharide-lignin transition zone, 33.05% (15.5% polysaccharide containing 6.24% of furfural calculated); L—Lignin layer, 9.75% (as pentosan; 17.55% lignin).

Thickness of Fiber Wall. Paper made from early wood, which has thin-walled fibers, is denser and has higher strength characteristics than paper made from late wood, which has fibers with thicker walls. Late-wood paper, on the other hand, is softer and has greater blotting ability. These differences are to be expected because more thin-walled fibers can be packed into the paper sheet and more points of adhesion, per unit of area, are provided.

On the basis of fiber-wall thickness, woods have been divided into the following groups:

I—Those having fibers with walls that constitute up to 30 per cent of the total area of the wood cross section.

II—Those having fibers of all wall thickness (e. g., conifers).

III—Those having fibers with walls that constitute from 30 per cent to 80 per cent of the cross-sectional area.

IV—Those having fibers with walls that constitute more than 80 per cent of the cross-sectional area.

The following table gives comparative data for woods of two different types:

	Pulp from Poplar Shoots, 1 Year Old	Beech Sulphate Pulp of Maximum Strength
Fiber group	III	IV
Breaking length, meters	9,670	7,430
Double folds	6,400	1,247
Bursting pressure, kg/cm²	6.05	3.94

This factor is controlled in practice by taking fiber-wall thickness into account when the raw materials for different grades of paper are selected.

Influence of Chemical Composition of Fibers on Pulp Strength

Wood and other cellulosic fibers are very complex chemically, but, for present purposes, they may be considered to consist of only three compounds: Cellulose, lignin, and hemicellulose, meaning by the last term all other accompanying substances, such as mannan, pentosan, levulan, etc.

These three compounds also may be considered to be arranged in each fiber in accordance with the accompanying diagram, which shows a central core of cellulose micellae surrounded by three layers. The innermost layer consists of cellulose chemically combined with hemicellulose; the central layer consists of hemicellulose combined with lignin; and the outer layer consists essentially of lignin.

In the ordinary process of digesting

* This is the third and last article of the series. The first was published in the July issue; the second in the September issue (1945).

the raw material, most of the lignin and much of the hemicellulose is removed, so that the finished pulp consists of a high percentage of cellulose with residual amounts of hemicellulose and lignin.

All three of these components play important parts in determining pulp strength.

Cellulose. In general, the higher the polymerization degree (D.P.) of the cellulose in a pulp, the greater the pulp strength. As D.P. measures the degree of decomposition of the cellulose, it seems safe to say that pulp of the highest strength can be obtained only when the cellulose is decomposed as little as possible.

Specifically, a series of sulphite pulps, varying in D.P. from 400 to 1,400, showed the following variations in strength characteristics:

Tearing resistance rose, almost directly with D.P., from 60 to 190 cm g/cm.

Bursting pressure rose, directly with D.P., from 1 to 7 kg/cm^2.

Double folds were well below 1,000 until the D.P. rose to 900, and then increased rapidly to 4,000. Breaking length rose from 1,000 to 8,000 meters in the D.P. range of 400 to 800, and then showed only a slight tendency to rise with increasing D.P.

When sulphate pulps were tested in a similar manner, it was found that they developed higher strengths for a given D.P. As the tensile strengths of sulphate and sulphate fibers should be the same at the same D.P., it may be assumed that sulphate fibers cohere more strongly and, therefore, make stronger paper.

Lignin. Since the removal of a part of the residual lignin in a pulp is the chief effect of the bleaching process, and since unbleached pulp is always stronger than pulp bleached by ordinary agents, it is reasonable to conclude that a small amount of lignin is indispensable for the production of pulp of maximum strength.

This, however, is not the case. Lignin is always a strength-decreasing factor, and the loss of pulp strength in ordinary bleaching is due not to the removal of the lignin but to the decomposition of some of the cellulose, which reduces the D.P.

This point was demonstrated by bleaching pulp with sodium chlorite, which removes lignin without attacking the fibers. It was found that breaking length and tearing resistance rose at a fairy steady rate as the lignin content of the pulp was reduced, while folding resistance remained low until the lignin content dropped to about 5 per cent, after which it rose rapidly. Pulps bleached with sodium chlorite can, therefore, be made stronger than the unbleached material.

Comparative Strength Characteristics of Bleached Straw Pulps

	Technical	*Chlorite*	
Yield (per cent)	38-40	51.1	56.5
Whiteness (per cent)	72.0	89.5	85.0
Breaking length, meters (65 deg. SR)	7,340	12,600	11,500
Double folds (65 deg. SR)	235	7,000	5,800
Bursting pressure, kg/cm^2 (65 deg. SR)	4.22	7.80	7.60
Tearing resistance, cm g/cm (65 deg. SR)	96	149	141
Strength quality number	36.7	103.0	92.0

Hemicellulose. Hemicellulose swells in water, and this property is of importance in making strong paper. When pulp is beaten in alcohol, this swelling effect does not occur, and paper made from such pulp has little strength. Some technicians have, indeed, claimed that for best results the largest possible amount of hemicellulose should be retained in the pulp.

Until recently, it was impossible to make an accurate study of the effect of hemicellulose on pulp strength, because holocellulose (which is cellulose with all its associated hemicellulose) could be obtained only in powder form. Now, however, fibrous holocellulose can be prepared with the aid of sodium chlorite.

The strength characteristics of intact holocellulose were found to be poor, but each increased as the hemicellulose content was reduced by treatment with weak alkalies, until a maximum was reached. Then further removals of hemicellulose caused a decline in strength.

It is convenient to express these strength-value maxima in terms of pulp yield, because yield is a measure of the hemicellulose content of the pulp.

The yield of the intact holocellulose tested was 70.16 per cent of the weight of the wood (beech). As increasing quantities of hemicellulose were removed, maximum strength values were found at points corresponding to the following yields: Breaking length and bursting pressure, 56.3 per cent; folding resistance and tearing resistance, 49.76 per cent; elongation, 45.79 per cent.

In general, maximum over-all strength will be obtained with a pulp yield of about 50 per cent, but the optimum value for a specific strength characteristic and a given pulp can be easily determined experimentally.

By applying this principle of the optimum yield, it is possible to produce paper of exceptionally high strength from grain-straw pulp, prepared by subjecting the straw to a mild alkaline treatment to remove silicious matter and digesting it in a solution of 8 per cent sodium chlorite, referred to the weight of the straw.

Strength values for this pulp and, for comparison, for a sulphate-digested technical straw pulp are given in the table above.

It will be noted that, in the case of the second chlorite pulp, the yield is above optimum and all strength characteristics are lowered. The same, of course, will be true with a yield below optimum.

Literature References

1) Vincent, G. P., and White, J. F.: German research on the use of sodium chlorite in the manufacture of wood pulp and cellulose, THE PAPER INDUSTRY AND PAPER WORLD; Part I, V. 27, No. 4, p. 547; Part II, V. 27, No. 6, p. 880, 1945.

2) Jayme, G.; Means for the production of paper pulps of maximum strength; *Papier-Fabrikant*; v. 40, No. 36/36, p. 137; No. 37/38, p. 145, 1942.

◆

Wet-Strength Papers Go Into Civilian Use

The use of synthetic resins in paper to hold the fibers together with an insoluble bond is a wartime technical development in papermaking that is discussed by C. G. Weber, National Bureau of Standards, in an article published in the August, 1945, issue of *Printing Equipment Engineer*.

At the Bureau, where studies of resin bonding in the manufacture of wet-strength papers for war maps is in progress, resins have been used to give paper better resistance to rough usage when wet than was heretofore possible. Papers are produced that can be successfully washed with hot water and soap, or cleaned in gasoline or other solvents after smearing with mud or oil and grease.

Resin-binding has been confined largely to wartime papers, but a start has been made in civilian papers. An indication that the same technique can be used to reduce the tendency of printing papers to change dimensions, curl, wave, and buckle with changes in the weather suggests the possibility of the extension of resin bonding into that field. Here, the improvement would be for the benefit of the printer more particularly than for the ultimate users of the papers.

Paper SKETCHES . . . . . .

IN A RECENTLY PERFECTED PROCESS, THE PAPER FILTER OF A GAS MASK HAS BEEN MADE WATER-REPELLANT BY COATING WITH A THIN ORGANO-SILICON FILM. THE PAPER FILTER, PRIOR TO THIS DEVELOPMENT, WOULD NOT PERMIT THE PASSAGE OF AIR WHEN WET. NOW THE FILTER IS AS EFFECTIVE IN WET WEATHER AS IN DRY, AND EQUALLY-SO UNDER CONDITIONS WHEN ACCIDENTALLY WETTED.

IN HIS "FOURTH SATIRE", JUVENAL, FAMED WRITER OF ANCIENT ROME, TAUNTED CRISPINUS WITH COMING TO ROME WRAPPED IN PAPYRUS.

SO SUPERIOR

WAS DUTCH PAPER IN THE 1700'S, THAT FINE BOOKS USING THE SUBSTANCE WERE WIDELY AND EXPRESSLY ADVERTISED AS BEING "IMPRINTED ON DUTCH PAPER"

THE WATERMARK OF ENGLAND'S FIRST PAPERMAKER (JOHN TATE, ABOUT 1498) WAS AN EIGHT-POINTED STAR ENCLOSED WITHIN A DOUBLE CIRCLE.

COLOR COMES OUT OF ITS FOXHOLE

With the dawn of Peace, color has left its foxhole for a civilian job.

And with the removal of restrictions on the paper industry, you will be rapidly restoring prewar standards. Since quality dyes will be so important, we are glad once again to be able to furnish an ample supply of practically any type dye desired.

When you have a dyeing problem, consult our Technical Staff. E. I. du Pont de Nemours & Co. (Inc.), Dyestuffs Division, Wilmington 98, Delaware.

Du Pont Dyestuffs

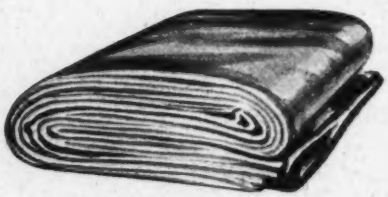
DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING . . . *THROUGH CHEMISTRY*
They Finished THEIR Job—Let's Finish OURS—Buy Victory Bonds

ILLUSTRATING THE OBVIOUS

THE outside measurements of both cartons are the same. The carrying capacity of the square carton is more than double that of the one that is distorted.



Any distortion of the size and shape of the interstices between the threads of a felt reduces the capacity of the felt to carry off water and results in spotty drying. This, in turn, slows down the speed of the machine, increases the amount of steam needed at the drier rolls, causes excessive broke and impairs the quality of the finished paper. One reason why Hamilton Felts remove more water in less time and deliver uniformly dried sheets is because Hamilton Felts are woven at uniform tension, warp and weft. They therefore, exert uniform tension over the entire surface of contact, *preventing distortion of the mesh* and avoiding the necessity for frequent stops for adjustment. Verify this in your own mill. Equip any of your paper machines with a Hamilton Felt. Speed it up. Keep a record of the increased tonnage it produces. Note the saving in steam, the reduction of broke, the better formation of your finished product.

• From the thinnest tissue to the heaviest board there is a Hamilton Felt that will do your work better, faster and at lower cost.

SHULER & BENNINGHOFEN, HAMILTON, OHIO

• Miami Woolen Mills •

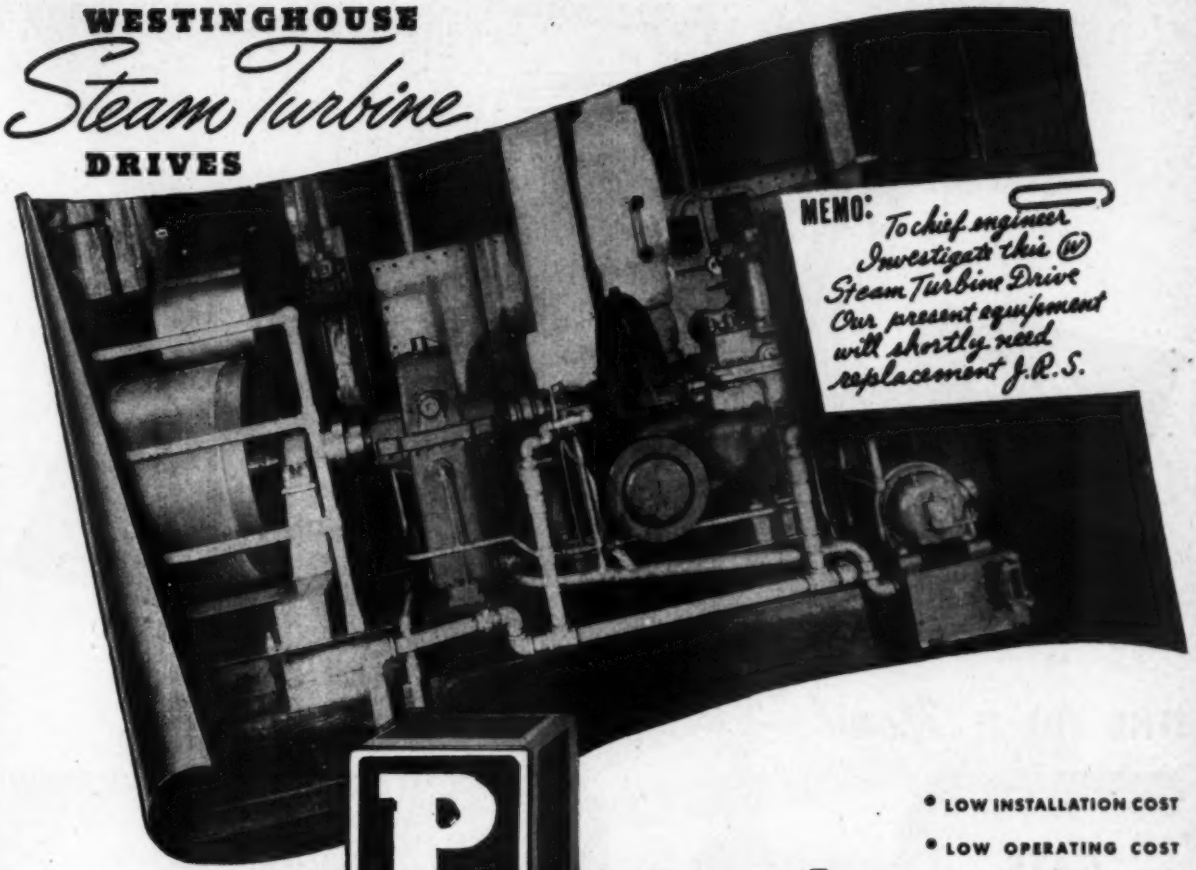
Hamilton Felts

• Established 1858 •

WESTINGHOUSE

Steam Turbine

DRIVES



. . . assure P uction *plus*

- LOW INSTALLATION COST
- LOW OPERATING COST
- PLANT HEAT BALANCE
- POWER PLANT RELIEF
- PRODUCT UNIFORMITY

The Mechanical-*Oil Relay* Governor Holds the Quality

Quality's first "must" is uniformity. Uniformity, likewise, is a direct result of smoothness of power flow and constancy of speed. The exclusive Westinghouse Mechanical-Oil Relay Governor makes this possible, holding any speed setting indefinitely, regardless of variations in load, inlet pressure, superheat and exhaust pressure.

Drive maintenance figures, in many a paper mill, have reached a point where it is more economical to replace present drives than to attempt their upkeep and repair. They are "burned out" by war fatigue.

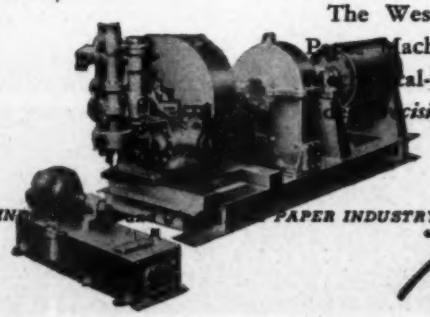
Replacements with smooth-power-flow Westinghouse Steam Turbine Drives are not only the economical answer; they are a farsighted investment in both volume and quality of output.

The Westinghouse Steam Turbine P achine Drive, with exclusive al-Oil Relay Governor, pro- *cision control* of speeds, over any range required.

It delivers smooth, unwavering power on overload or underload . . . holds product uniformity and high quality . . . keeps output at a constant maximum.

Westinghouse Steam Turbine Drives, single-stage or multi-stage, are available over the *entire range* of horsepowers, speeds and steam conditions encountered in paper mill practice.

For complete information on the efficiency and economy of by-product power, call your nearest Westinghouse office or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa. J-94691



MIN PAPER INDUSTRY

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Paper Machine Drives

New COMPLETE *Catalog*

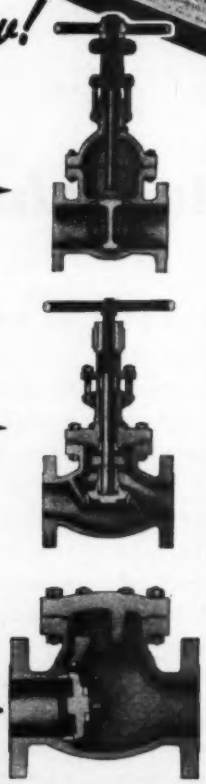
One DEPENDABLE *Source*

SEND FOR IT *Now!*

GATE

GLOBE AND ANGLE

SWING CHECK



This CATALOG IS DIFFERENT

THE NEW 1945 Edition of the OIC Steel Valve Catalog *tells all* on Steel Valves . . . gives you complete technical information in concise, time-saving form. Helps you to find quickly the *right* OIC Valve for every application and the correct trim to insure the best performance.

Forty-four pages packed with useful, authoritative data for every user of steel valves. You will find, listed and described, *complete* valve service from *one* dependable source backed by 62 years of experience and seasoned judgment in quality valve manufacture.

WRITE TODAY for copy of the new OIC Steel Valve Catalog. There is no obligation.

THE OHIO INJECTOR COMPANY
WADSWORTH, OHIO
Quality Leaders in Valve Manufacture Since 1883

Only ENTERPRISE Vertical Mills give you all 8 benefits needed for modern production

HIGHER OUTPUT . . . Up to 2¾ tons of sulphated paper per hour.

LESS OPERATING POWER . . . Only 40 HP at 1800 rpm required for this output.

LONGER LIFE . . . Hundreds of Enterprise Vertical Mills have been in use for years.

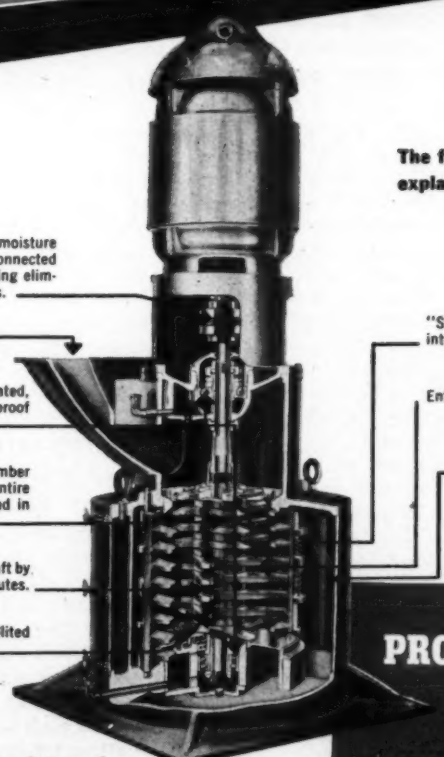
LESS MAINTENANCE . . . Durable materials used throughout, rigidly assembled.

FASTER SERVICING . . . Fewer working parts which are replaceable in minutes.

LESS WEIGHT AND SPACE . . . Only 40 inches square at base, 68 inches high, 3000 pounds.

QUIET, VIBRATIONLESS OPERATION . . . Vertical construction permits even load over entire rotor.

FLEXIBILITY . . . You can use any one of nine interchangeable rotor assemblies to meet conditions . . . change screens to various degrees of fineness.



Heavy duty motor, enclosed in moisture and dust proof compartments connected directly to shaft by flexible coupling eliminating power transmission losses.

Down feed, down discharge.

Trouble-free bearings, fully lubricated, enclosed in dust and moisture proof housings.

Material in disintegration chamber surrounds rotor so that the entire revolution of the rotor is engaged in useful work.

Hammers locked on solid steel shaft by locking rings are changed in minutes.

Leading edges of hammers stellited for longer life.

"Swing-away" comb rack prevents damage to mill if metal is accidentally fed into disintegrating chamber.

Entire screen area discharges finished material.

Simple construction with parts machined to fit. No crevices for materials to lodge.

HERE IS PROOF!

The features of Enterprise Vertical Mills illustrated explain why Enterprise offers you these 8 benefits

For a simple low-cost solution of your problems of grinding, mixing, macerating, shredding or pulping, there is an Enterprise Vertical Mill to meet your needs. Write today for full information on models and applications. Address Dept. J-13.

PROCESS MACHINERY DIVISION
OF ENTERPRISE ENGINE & FOUNDRY COMPANY

Mills · Presses — *Cookers · Dryers*

18th and Florida Sts. — San Francisco, Calif.

ALLIED

COVEL-HANCHETT CO. HAS BECOME A DIVISION OF THE HANCHETT MANUFACTURING CO.

A new division of the Hanchett Manufacturing Company was formed on September 1 when that company acquired the Covel-Hanchett Company, Big Rapids, Michigan.

This new division will be known as the Saw and Knife Fitting Machine Division, and will continue under the same management as when doing business as the Covel-Hanchett Company. The line of Covel, Baldwin, Tuthill & Bolton, and Hanchett, saw and knife fitting machinery, will be continued.

All inquiries formerly sent to Covel-Hanchett Company should now be referred to the Hanchett Manufacturing Company, Saw and Knife Fitting Machine Division, Big Rapids, Michigan.

◆

▶▶▶ AN ADDITION which provides extra offices, conference room, and drafting room is being built by the Roots-Connersville Blower Corporation at its plant in Connersville, Indiana. Further plans for the modernization of the general offices call for a new lobby, re-arrangement of the central stairway, enlarging and modernizing the rest rooms, and the installation of an up-to-date heating and ventilating system throughout. It is expected the work will be completed this year.

◆

HERCULES ANNOUNCES A MAJOR EXPANSION PROGRAM

A construction program involving the expenditure of $30,000,000 was announced on October 16 by Hercules Powder Company, Wilmington, Delaware. It is expected that construction of the new plants and increased facilities will be completed within the next three years.

With this expansion, the employment in Hercules plants and offices will continue at the levels reached at the end of the war, which was 74 per cent above the prewar figure.

The largest of these expansion plans will be put into effect by the Cellulose Products Department, which will increase the production of various cellulose derivatives used by the lacquer, plastics, rayon, and other industries. Cellulose acetate capacity will be increased 100 per cent to meet the demands of the plastics and rayon industries, and ethyl cellulose capacity is being increased 100 per cent for plastics and protective coatings.

Also included in the cellulose products expansion is the purchase of facilities at Parlin, New Jersey, from the Defense Plants Corporation. This plant which had been producing nitrocellulose for the American and British armed forces, will be equipped for the manufacture of cellulose acetate and perhaps other cellulose derivatives.

Additions and improvements to the company's seven dynamite and blasting cap plants, the Paper Makers Chemical plants, the naval stores plant at Hattiesburg, Mississippi, and the purified chemical cotton plant at Hopewell, Virginia, also are expected to be made within the next year.

Hercules also has announced a $200,000 expansion of its Mansfield (Mass.) plant which will triple the production of hard resins. A new resin plant will be built near Burlington, New Jersey, which will materially increase Hercules production of organic chemicals and resins.

◆

BRANDON CORP. ACQUIRES CONTROLLING INTEREST IN FITCHBURG DUCK MILLS

Controlling interest in the Fitchburg Duck Mills, Fitchburg, Massachusetts, was acquired by the Brandon Corporation, of Greenville, South Carolina, on November 1. Although the Brandon Corporation now will supervise the operations of the Fitchburg plant, the corporate identity of Fitchburg Duck Mills will be maintained. Each of these companies will continue to manufacture their well-known brands of cotton and asbestos dryer felts, the same as heretofore.

The Morey Paper Mill Supply Company, of Fitchburg, has relinquished active management of the Fitchburg Duck Mills and will devote its entire time to the sales and distribution of all the dryer felts manufactured by both the northern and southern plants. Solicitation and paper mill contacts on all dryer felt products will be made by Morey company.

Woodward, Baldwin & Company, of Baltimore, were named general agents for the Fitchburg Duck Mills and will serve in the same capacity for both mills.

Just before the war, the franchise for English Hindle looms in this country was purchased by Brandon Corporation for the manufacture of high-grade asbestos felts. However, the scarcity of asbestos during the war forced the company to discontinue the manufacture of these felts. With wartime requirements for asbestos diminishing, Brandon Corporation now is in a position to resume the manufacture of these English asbestos felts which were introduced into this country under the trade name of Scapa-Hall Asbestos Felts.

◆

LATEST FEATURES BUILT INTO NEW LABORATORY OF HEPPENSTALL COMPANY

The new laboratory of the Heppenstall Company in Pittsburgh is nearing completion. It is ultra-modern in construction, being windowless; it is entirely air conditioned, and will be lighted from powerful flourescent fixtures recessed into the acoustic ceiling.

The 12,000 feet of asphalt tile floor space will have wrought iron piping installed beneath it to form a radiant heating system. Interior walls will be of salt glaze ceramic buff tile and a similar tile will be applied on the exterior walls. In addition to the air conditioning system, an air cleansing apparatus will assure greater accuracy and testing control.

According to James C. Hartley, director of research, a greatly expanded testing program for all types of steel forgings, shear and chipper knives, plus automatic tongs will be made possible through the acquiring of a comprehensive variety of testing equipment.

The facilities available to the Heppenstall research workers will include electric induction and salt bath furnaces, sub-zero testing apparatus, supersonic testing devices, hardness testers of many varieties, dilatometers for equilibrium diagram studies, and a machine shop with many types of production size tools.

◆

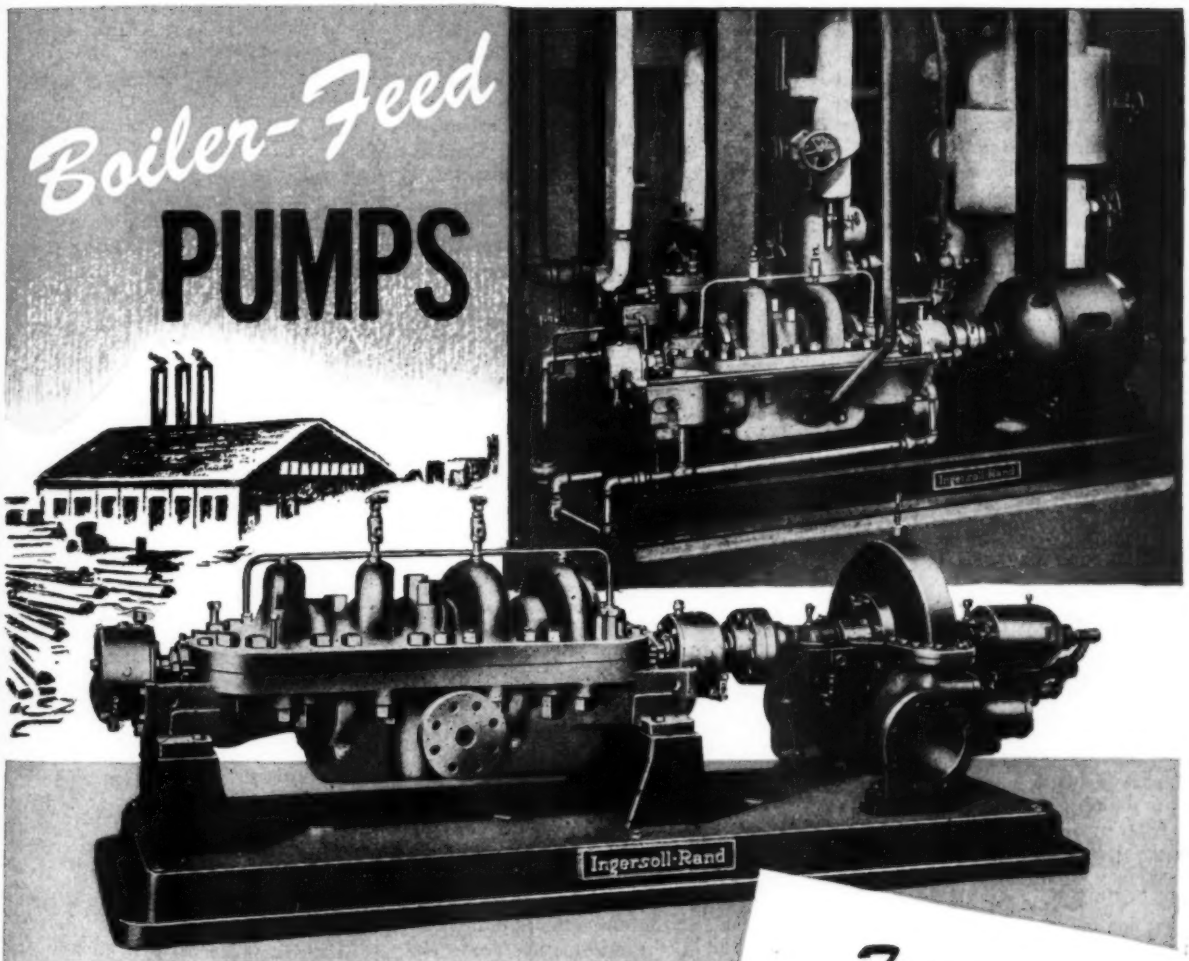
ELECTRO-ALLOYS FOUNDRY LAUNCHES PROGRAM FOR $2,500,000 EXPANSION

A construction program has been announced by the Electro-Alloys Foundry (Div. of American Brake Shoe Co.) at Elyria, Ohio. It is estimated the expenditures will run $2,500,000.

The plan includes a new alloy foundry four times the size of the present one, an office building 100 ft. x 50 ft., a two-story employees building, and a new boiler room.

New equipment for the foundry will include induction and electric arc melting furnaces, sand conditioning and sand handling equipment,

Boiler-Feed PUMPS



Steam—Steam—and more Steam is used in pulp and paper making. The boiler plant *must* have pumps that stay-on-the-job, that are efficient and thus hold down power costs, and that are easy to operate and maintain. Class CNT pumps meet these specifications.

They are available for pressures up to 800 psi. Class RT units of similar design are available for pressures up to 1200 psi. An I-R engineer will gladly tell you more about them. Also ask him for a copy of the complete bulletin on I-R pumps for pulp and paper mills, Form 7022, Ingersoll-Rand Company, Cameron Pump Division, 11 Broadway, New York 4, N. Y.

Features of INGERSOLL-RAND CLASS CNT PUMPS WHICH MAKE THEM IDEAL FOR BOILER-FEED SERVICE:

- Available in materials selected by the I-R metallurgical department to best suit any boiler-feed water.
- Balanced both mechanically and hydraulically for smooth operation.
- Extra large oil-lubricated bearings support the rotor. Ball bearings are standard; sleeve bearings can be furnished as an alternate.

Ingersoll-Rand
CAMERON PUMP DIVISION

10-662

COMPRESSORS · CONDENSERS · TURBO BLOWERS · CENTRIFUGAL PUMPS · ROCK DRILLS · AIR TOOLS · OIL AND GAS ENGINES

molding machines, mold and core ovens, sandslinger, heat treating furnaces, and an installation of centrifugal casting machines. New X-ray equipment will be added to that already installed, as it is a basic policy that all Thermalloy castings are X-ray controlled.

The new foundry will produce alloy formerly handled by American Manganese Steel Division of Chicago Heights, Illinois. Amsco Alloy and Thermalloy are identical, and will be produced entirely at Elyria and sold under the name Thermalloy.

◆

STRUTHERS-WELLS PLANTS CONVERTED TO PEACETIME PRODUCTION ACTIVITIES

The Titusville and Warren (Pa.) manufacturing plants of the Struthers Wells Corporation have been converted from their all-out participation in war production activities to machinery and equipment for the chemical and process industries.

Struthers Wells Corporation entered the plastics machinery field this year with an improved line of intensive mixers for compounding and processing heavy plastic materials including natural and synthetic rubber.

A free discharging type internal mixer has been introduced by the Northmaster Division of the company which fills a long felt need for faster operation on sticky and otherwise difficult plastic materials.

◆

FIRST PEACE-PRODUCTION OF BOWSER PUMPS GET CHAMPAGNE CHRISTENING

At the plant of Bowser, Inc., Fort Wayne, Indiana, elaborate ceremonies marked the beginning of peacetime production.

As the first Bowser gasoline computer pumps rolled off the assembly line, Marilyn Maxwell, movie star whose home is in Fort Wayne, christened — with champagne — the first pump "Pax," after the Goddess of Peace.

Incendiary bombs and gun fire control units of B-29 bombers were produced at the Bowser plant during wartime.

◆

DOVER INDUSTRIES, INC., ESTABLISHED IN CHICAGO

Dover Industries, Inc. announces the start of operations at its plant located at 2929 N. Campbell Avenue, Chicago 18, Illinois.

This is a new enterprise which was organized to do manufacturing and jobbing of metal articles requiring plated finishes. The company's executives has each had from ten to twenty years of experience in the metal finishing industry. L. D. Jensen, formerly vice president of Chromium Corporation of America, is president; O. A. Wettlaufer and E. L. Berkenkotter, formerly sales manager and plant superintendent, respectively, of Chromium Corporation of America, are vice presidents; and K. W. Schwartz, formerly vice president of United Chromium, Inc., is treasurer.

An industrial site with 45,000 square feet of available space has been acquired. Modern and complete facilities have been installed for hard chromium plating and heavy nickel plating on equipment weighing up to 5 tons and 22 feet in length. The extensive experience of the organization's engineering personnel is available to the paper industry in connection with the plating of screen plates, coating rolls, press rolls, and many of the other standard applications.

◆

MONSANTO OFFERS SERVICE OF A PLASTICS COUNCIL

The Plastics Division of Monsanto Chemical Company, St. Louis, announces it has formed an application advisory group to assist manufacturers in using plastics, entirely without charge or obligation.

Known as the Plastics Technical Council, the group was created after a study of the information needs of manufacturers using or contemplating the use of plastic materials in their products or processes.

The council, whose present membership consists of ten engineers and chemists, will study problems and proposed applications submitted to Monsanto by manufacturing and merchandising companies. Working in close collaboration with the research and engineering departments of the company, the council will formulate a set of recommendations for presentation to the inquiring manufacturer.

◆

CORNING GLASS WORKS EXPANDS IN SOUTH AMERICA

A substantial interest in the largest glass manufacturer in South America, Cristalerias de Chile, completes the third important development in the Corning Glass Works' expansion program in that country.

The stock of Chilean concern (established in 1901) is widely held, and the majority control will be retained by the original owners in South America, while Corning will be represented on the Board of Directors by Lawrence King, managing director of the company's entire South American interests. Rodolfo Jaramillo is director-general of Cristalerias de Chile and also a member of the Board of Directors.

Two years ago, Corning Glass Works obtained a minority interest in Argentina's foremost glass concern, Cristalerias Rigolleau of Buenos Aires; and early last fall a comparable investment was made in Brazil's leading glass company, Vidraria Santa Marina of Sao Paulo.

◆

HEWITT RUBBER CORP. IMPROVES INDUS. HOSE

A revised and improved line of industrial hose, with rearrangement of brands to more adequately serve the users of these products, has been announced by Hewitt Rubber Corporation, Buffalo, New York.

New brand names are: Monarch, for top quality or "super" grade which formerly was identified as Maltese Cross; Ajax, new high grade; Conservo, utility or general service hose. The widely known "double-barreled" hose that Hewitt developed for the welding industry, will continue under the name of Twinweld.

The Hewitt hose catalog, which is being distributed to dealers, jobbers and factory field men, lists each item by brand, type and specifications.

◆

▶▶▶ SEVERAL E. D. Jones & Sons Company refiners have been ordered by the St. Regis Paper Company at Deferiet, and the Taggart Corporation at Oswego and Carthage, and some of the new equipment is already in operation.

◆

DOMINION OXYGEN CO., LTD., TO BUILD AT VANCOUVER

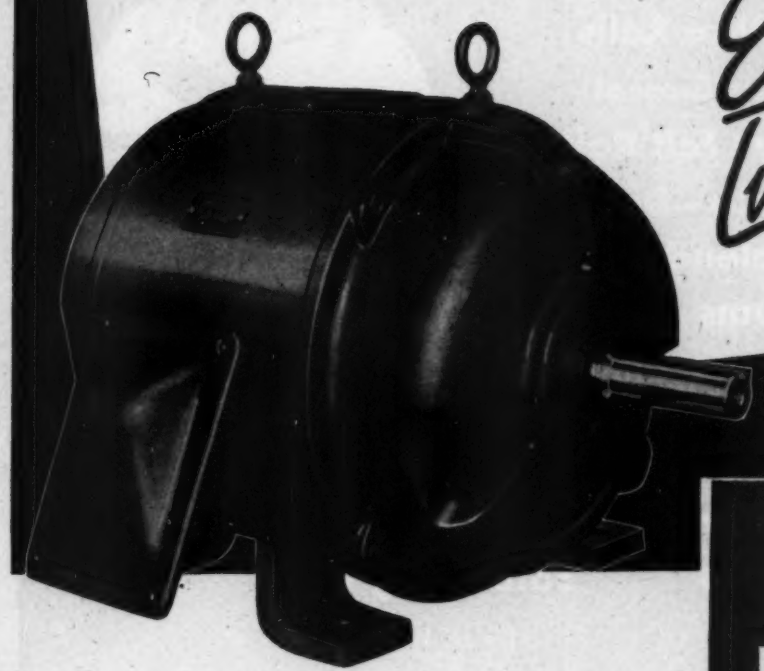
Designs have been drawn for the construction of an oxygen-producing plant and an acetylene-generating plant at Vancouver, British Columbia, and the erection of an oxygen filling station at Winnipeg, Manitoba, by Dominion Oxygen Company, Ltd., a unit of Union Carbide and Carbon Corporation, New York. These facilities will supply these areas with two of the company's principal products, Dominion oxygen and Presto-O-Lite acetylene, and will complete the chain of Dominion Oxygen's plants across the Dominion.

Contracts for the construction of the plants have not yet been awarded although the designs have been completed. The proposed locations of the plants have not been disclosed.

Oxygen is used for many important industrial operations, especially in the oxyacetylene processes of cutting, welding and flame-treating of metals.

RELIANCE Series C MOTORS

End Your Lubrication Worries!



Say good-bye to bearing worries! Regardless of whether you over-grease or under-grease, Reliance's ball bearing design guarantees longer motor life.

Assured lubrication—without the care you must exercise with conventional motors—is a time-saving, money-saving reason for preferring Reliance Motors. Write today for Instruction Sheet 3042, which explains why the Reliance design needs no lubrication care.

RELIANCE ELECTRIC & ENGINEERING CO.

1078 Ivanhoe Road Cleveland 10, Ohio

Birmingham • Boston • Buffalo • Chicago • Cincinnati • Detroit • Greenville • Houston • Kalamazoo
Knoxville • Los Angeles • Minneapolis • New Orleans • New York • Philadelphia • Pittsburgh
Portland, Ore. • Rockford, Ill. • St. Louis • San Francisco • Seattle • Syracuse • Washington, D. C.

Reliance Design Features

1. **Protecting enclosures** keep out dirt, chips, oil, excess moisture.
2. **Steel stators for strength.**
3. **Thirteen-step winding treatment,** for maximum stator protection.
4. **Pressure cast aluminum rotors** provide trouble-free windings.
5. **Heavy shafts,** liberally designed for added strength.
6. **Improved bearing lubrication** affords *real* protection to bearings and windings.
7. **Optional lead outlet arrangement** permits machine mounting with elimination of conduit box.
8. **Flange and face type brackets** offer alternative methods of machine application.

RELIANCE A-C D-C MOTORS

New machine buyers are specifying Lodding Doctors as original equipment

Breast Rolls—Wire Rolls
Couch Rolls (Plain-Grooved)
Press Rolls—Press Felt Rolls
Smooth Press Rolls—Dryers
Breaker Rolls—Calender Rolls
Reel Drums
Supercalender Rolls
(Chilled Iron, Paper, Cotton)
Creping (Wet-Dry) **Cutting-off Doctors**
Cleaning Doctors—Yankee Dryer Doctors
Stack Dryers **Saturating Rolls**

LODDING
FLOATING BLADE
DOCTORS

LODDING ENGINEERING CORPORATION
WORCESTER, MASSACHUSETTS, U. S. A.
Represented outside of New England by
W. E. GREENE CORPORATION
Woolworth Building NEW YORK
PULP and PAPER MILL ACCESSORIES, Ltd., 2023 Aylmer Street, MONTREAL, QUEBEC

Today-

Your *Standard*
GATES VULCO ROPES

are giving **BETTER SERVICE** than

ANY V-Belts EVER Built Before the War!

To meet the unprecedented severity of combat service on U. S. Army tanks, tractors and self-propelled big guns, Gates developed and built V-Belts *far superior* to any that were ever built before--and here is why this fact is important to YOU:—

✔ Every improvement developed by Gates for these Army V-BELTS has been added, day by day, to the quality of the standard Gates Vulco Ropes which have been delivered to you.

You have not had to wait until after the war for these improvements for the simple reason that more efficient V-Belts have been an important factor in increasing essential war production. That is why your standard Gates Vulco Ropes are today the best V-Belts that have ever been delivered to you.

In addition, where V-Belts of special construction are required, your Gates Rubber Engineer is in position to supply a Gates Vulco Rope that is especially engineered to meet your special needs. You need only pick up your phone book and look under the heading "Gates Rubber." The Gates Rubber Engineer will bring to you, right in your own plant, the very latest advances in V-Belt construction and in drive operation as well.

and NOTE THIS:—

Gates also makes these special belts to meet exceptional service needs.

Rayon Cord V-Belts
Static-Safety V-Belts
Special Synthetic V-Belts
Cotton Cord V-Belts
Steel Cable V-Belts

All Gates V-Belts are Built With *The Patented* CONCAVE SIDE

Gates — THE MARK OF SPECIALIZED RESEARCH

THE GATES RUBBER COMPANY

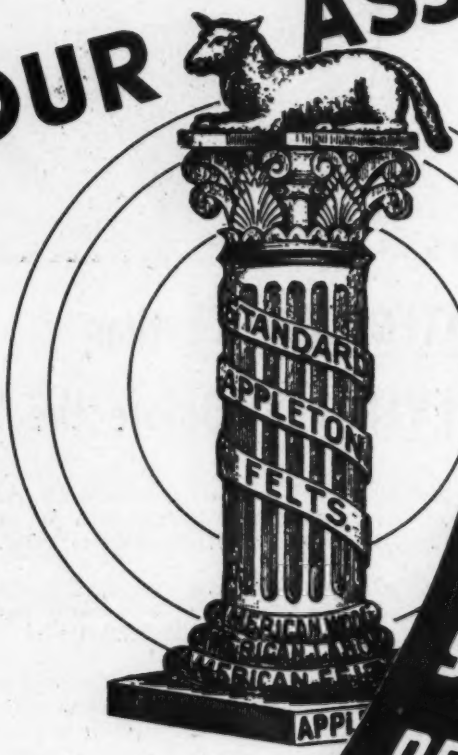
Engineering Offices and Jobber Stocks in All Large Industrial Centers

4310

GATES VULCO ROPE DRIVES

CHICAGO 6, ILL., 549 West Washington. NEW YORK CITY 3, 215-219 Fourth Avenue. ATLANTA 3, GA., 521 C. & S. Nat'l Bank Bldg.
LOS ANGELES 21, CAL., 2240 E. Washington Blvd. DENVER 17, COLO., 999 S. Broadway. DETROIT 2, MICH. 223 Boulevard Bldg.
PORTLAND 9, ORE., 333 N.W. 5th Ave. DALLAS 2, TEXAS, 1710 N. Market St. SAN FRANCISCO 3, CAL., 170 Ninth St.

YOUR ASSURANCE

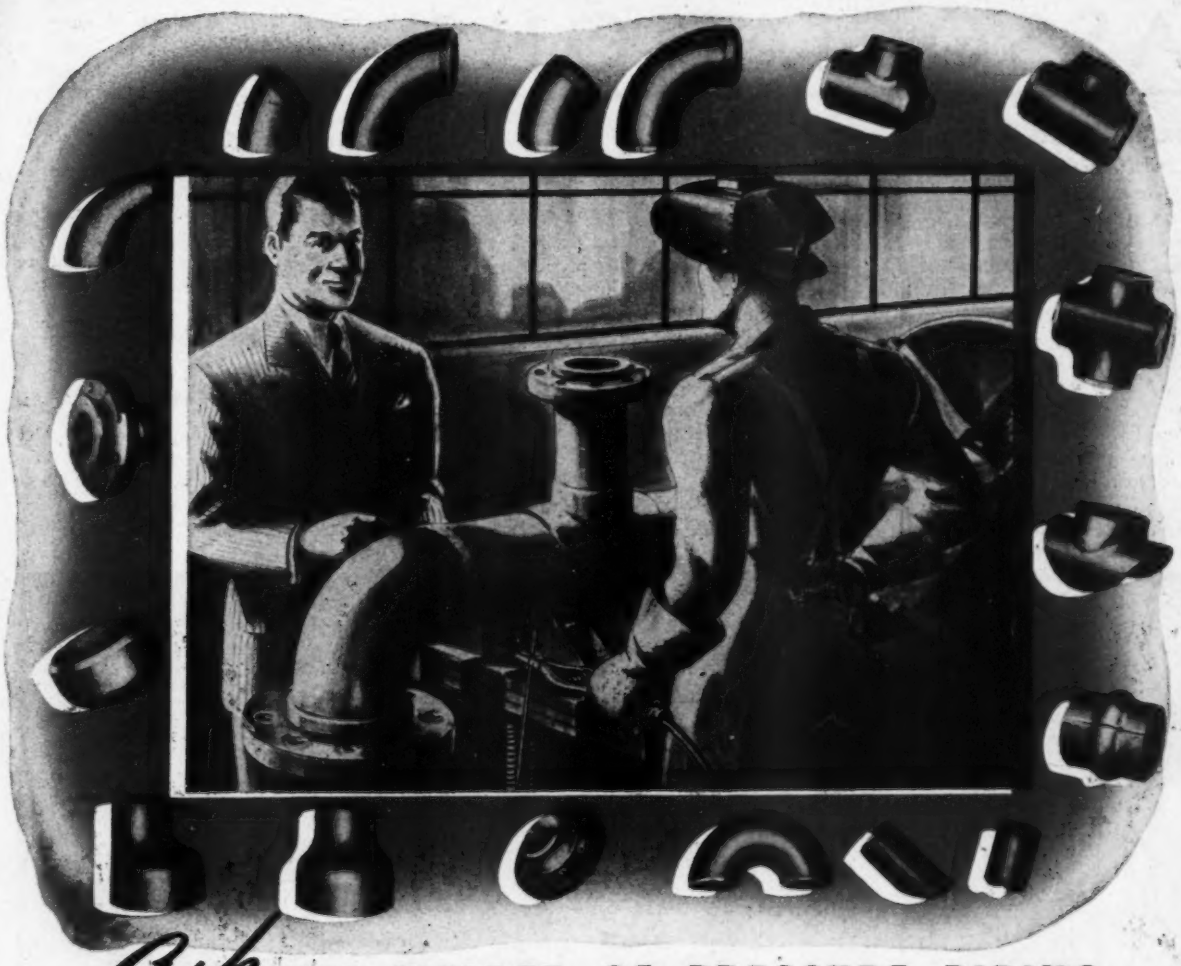


SERVICE
DESIGN
FINISH
UNIFORMITY
DEPENDABILITY

make APPLETON FELTS good paper

Appleton Woolen Mills

APPLETON • WISCONSIN



Ask **THE WELDER OF PRESSURE PIPING**

what he thinks of

MIDWEST WELDING FITTINGS

You will find that he gives them hearty approval. Piping welders generally have a high appreciation of the exceptional dimensional accuracy and uniformity of Midwest Welding Fittings . . . their job is easier and they can turn out better work faster.

Midwest Welding Fittings have extraordinary dimensional accuracy because particular precautions are taken in their manufacture. Midwest Welding Elbows, for example, are made slightly oversized, then reheated to forging temperature and given a final accurate sizing in compression. This provides accurate dimensions, true circular section, and uniform wall thickness. Comparative corrosion tests as well as tensile and ductility tests have proved the beneficial effect of forging the metal in compression.

Welders also appreciate the wide variety of Midwest Welding Fittings . . . including "Long Tangent" elbows and reducing elbows. There is a fitting for practically every condition he encounters. Ask the local distributor or our nearest office for Bulletin WF-41.

MIDWEST

PIPING & SUPPLY COMPANY, INC.

Main Office: 1430 South Second St., St. Louis 4, Mo.

ASSOCIATIONS

DR. KRESS GUEST SPEAKER AT CHICAGO PRO PAPER GROUP

The Chicago Professional Paper Group held its first meeting of the season on September 24 at the Chicago Bar Association. The meeting followed a dinner, which has been the custom since the Group was organized.

There was a good attendance, and the Group was fortunate in having as its guest speaker for this opening session Dr. Otto F. Kress, of the Institute of Paper Chemistry. Dr. Kress had just returned from Europe, and he addressed the Group with some highlights of his visits to paper mills of Germany and France. His talk was timely and informative, and was accented with many interesting comments and entertaining episodes.

The meeting was presided over by Harry E. Weston, president. J. L. Kubicka, chairman of the Program Committee, introduced Dr. Kress.

During the dinner, a report circulated that it was the birthday of A. E. Montgomery, of J. O. Ross Engineering Corporation, and a member of the Group's Executive Committee. As a birthday cake with lighted candles was placed on the speakers' table, those present sang "Happy Birthday."

Regular meetings of the Group are scheduled for the third Monday of each month. The regular time of meeting was resumed with the October meeting at the Bar Association on the evening of the 15th. At that meeting, the speaker was V. V. Vallandigham, of the technical department of Kelco Company, Chicago. Mr. Vallandigham spoke on "The Effective Evaluation of Paper Surfaces for Printability," which address will be published in the next issue of this magazine.

◆

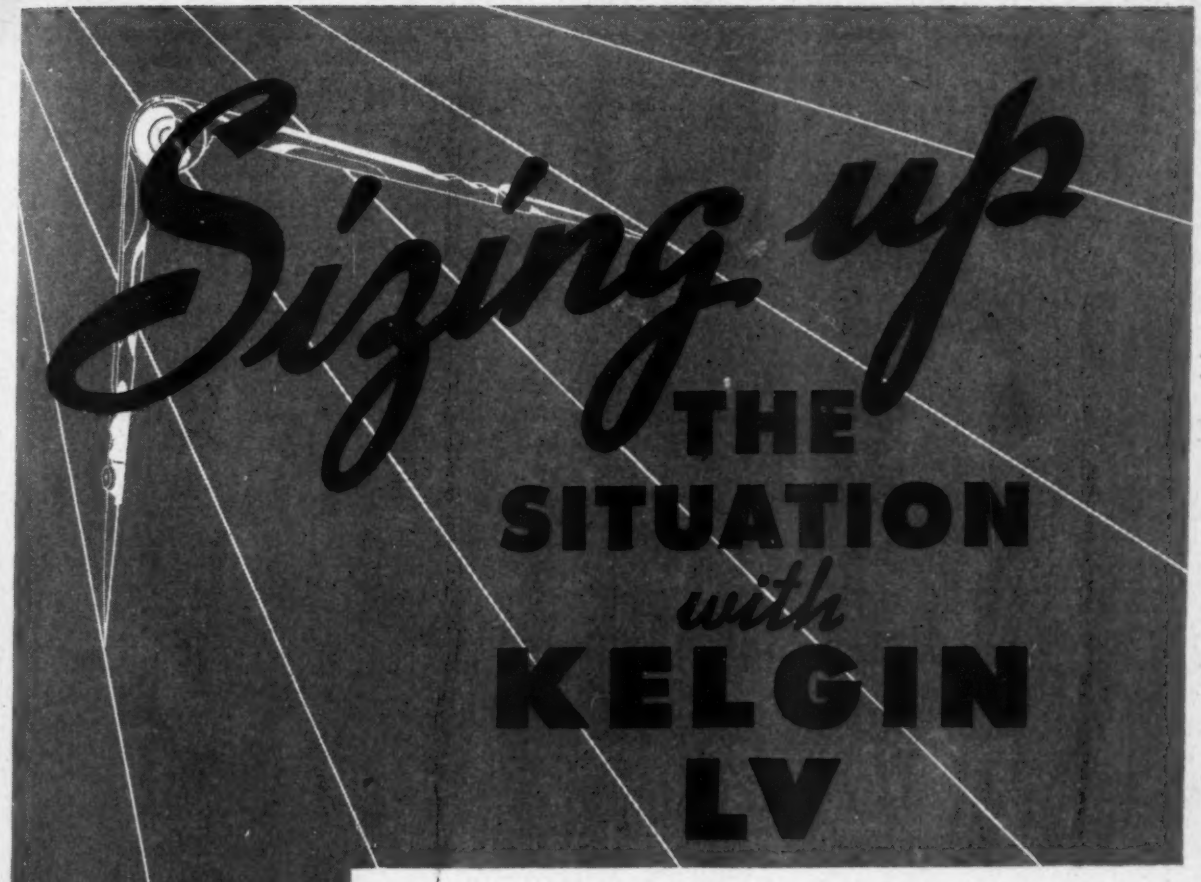
BOLTON AWARD CONTEST NAT'L WINNERS ANNOUNCED

The American Pulp and Paper Mill Superintendents Association recently announced national winners in the Bolton Award Contest, as follows:

First Prize—$500 War Bond. Won

LEFT—Seated at the speakers' table for the dinner of the Chicago Professional Paper Group were: V. V. Vallandigham, secretary of the Group; J. L. Kubicka, chairman of the program committee; Harry E. Weston, Group president; Dr. Otto F. Kress, of the Institute of Paper Chemistry, who was guest speaker; A. E. Montgomery, a member of the Group's executive committee; and F. D. Long, vice president of the Group. RIGHT—A close-up of Dr. Kress speaking; Mr. Weston and Mr. Kubicka seated at his right

At left is a partial view of the Chicago Professional Paper Group's first meeting of the season as seen from the speakers' table. Right—A. E. Montgomery prepares to cut birthday cake. Dr. Kress, guest speaker, is shown with Mr. Montgomery



THE UNIFORM, ECONOMICAL SIZING FOR PAPER BOARD

That is the way to prepare your paper board for wax coatings and gloss ink printing with a uniform sizing.

Kelgin LV dissolves readily in either hot or cold water. It is naturally adapted to waterbox application in the calender stacks. Kelgin LV doesn't cause foaming, picking or sticking of sheets to the calender rolls.

Besides excellent results, the surprising economies of Kelgin LV make it well worth trying. Consult our Technical Department about your commercial application of Kelgin LV.

KELCO COMPANY

75 E. Wacker Drive
CHICAGO-1

31 Nassau Street
NEW YORK-5

530 W. Sixth Street
LOS ANGELES-14

by Kenneth J. Mackenzie, assistant superintendent of paper mills, Eastman Kodak Company, Rochester, New York.

Second Prize—$300 in War Bonds. Winner, Charles A. Shoudy, paper mill superintendent, West Virginia Pulp & Paper Company, Charleston, South Carolina.

Third Prize—$200 in War Bonds. Edward T. Jones, formerly of Brown Company, Berlin, New Hampshire. (Now with Charles T. Main, Inc., Boston.)

All of the ten articles which won first prize in the divisional contests were written on one of the following three subjects:

"How to Promote Better Relations Between Workers and Their Immediate Foremen."

"The Part a Superintendent Should Play in Developing and Sponsoring Harmonious and Co-Operative Employer-Employee Relations."

"How Can the Superintendent Encourage His Men to Suggest Ideas for More Efficient Operation."

The book containing these articles will be published shortly by John W. Bolton and Sons, Inc., and will be distributed by them. It contains the opinions of men on the job and in supervisory positions.

The Bolton Contest for 1946 will be announced shortly.

◆

▶▶▶ THE SEVENTH Annual Meeting of the Packaging Institute, Inc., will be held at Hotel Commodore, New York City, November 26 and 27. Because of present overcrowded hotel and traveling facilities, the conference will be limited to membership of the Institute. Announcement has been made of the appointment of Major Albin P. Dearing as executive director of the Institute. Major Dearing will assume his new position on November 1. He was connected with Container Corporation of America prior to entering the Service.

◆

NEXT ANNUAL MEETING OF A.P.P.A. WILL BE LIMITED TO BUSINESS

An announcement from E. W. Tinker, executive secretary of the American Paper and Pulp Association, is as follows:

"The annual meeting of the American Paper and Pulp Association has been scheduled for February 24-28, 1946, at The Waldorf-Astoria, New York.

"Unless travel and hotel congestion have been considerably relieved by that time, we will hope that attendance can be limited to those having business at the meeting.

"The Waldorf has asked us to inform the industry that it will have no sleeping rooms available for assignment. The few that it had allotted already have been assigned.

"Since this office cannot undertake to make hotel room reservations, it is suggested that you make early reservation at the hotel of your choice in case you plan to attend the meeting in February."

◆

SPACE IN DEMAND FOR CHEMICAL EXPOSITION TO BE HELD IN FEBRUARY

Among the first postwar industrial expositions to be announced is the 20th Exposition of Chemical Industries which is being organized for the week of February 25 to March 2, 1946, in Grand Central Palace, New York.

Coming at a time when industries are in the throes of reconversion, the Exposition will serve as an accelerator, providing opportunities for personal contact and business conferences between principals, technical staffs, manufacturers and professional consultants.

Now that military needs no longer demand secrecy, many new products and processes created by the war are expected to be applied to civilian operations; and many other new methods and products shelved during war years, are emerging as by-products.

The Exposition announcement has been received with such enthusiastic response that a large portion of the display space on three floors of the Palace already has been requested.

C. F. Roth is manager and E. K. Stevens is associate manager. M. C. Whitaker, vice president of the American Cyanamid Company, is chairman of the advisory committee.

◆

AMER. PULPWOOD ASS'N ENGAGES SERVICES OF HARRY H. JEFFERSON

The American Pulpwood Association has engaged Harry H. Jefferson to direct the Association's training program, as inaugurated and authorized by the board of directors.

Mr. Jefferson has been with the United States Forest Service continuously since 1933. In addition, he has had many years of practical experience in woods work, both as an individual worker and in the capacity of supervising woods operations. He was one of the staff of the Regional Office of the U. S. Forest Service which developed and conducted the highly successful Pulpwood Production Labor Training Program for prisoner-of-war camps in the Eastern region. During the war, Mr. Jefferson also worked with pulp and paper companies in training foremen and civilian woods workers in pulpwood production.

In his new position, the first job Mr. Jefferson will undertake will be to direct the Pulpwood Production Labor Training School to be held at the University of Maine Forestry School Camp at Princeton the week of October 21.

Mr. Jefferson's services will be available to the Association's membership upon request.

◆

▶▶▶ A Philadelphia Chapter of the Salesmen's Association of the Paper Industry was formally launched September 10 when a party of New York members made the trip to Philadelphia to inaugurate the new chapter.

◆

FELLOWSHIP IN B. C. UNIV. OFFERED BY CAN. PULP AND PAPER ASS'N

Dr. N. A. MacKenzie, president of the University of British Columbia, has announced that the western branch of the Canadian Pulp and Paper Association has offered a fellowship of $1,000 renewable annually to graduate students who plan a career in that industry. The fellowship is open to graduates of any approved university. During the tenure of the fellowship the holder is expected to undertake investigations of some problem approved by the U. B. C. Department of Forestry.

◆

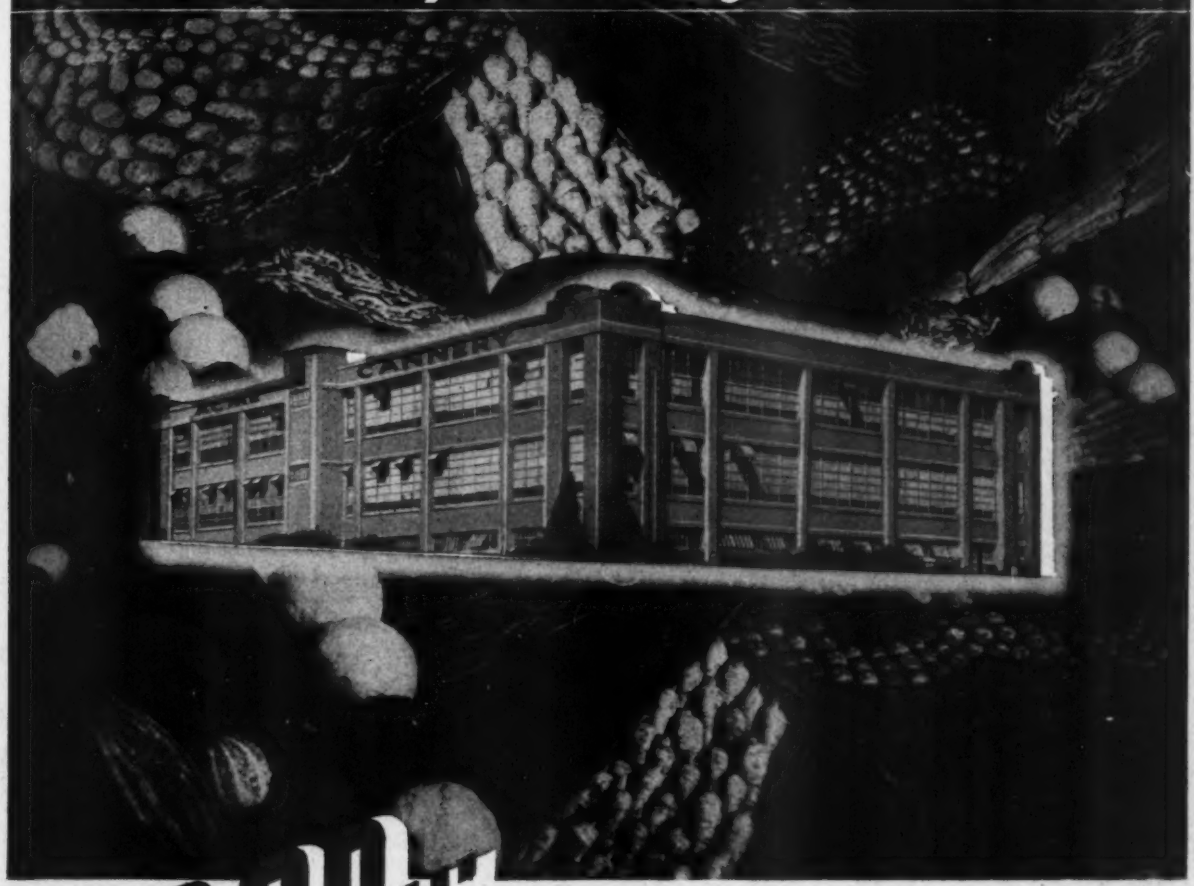
NEW PERSONNEL FOR THE AMERICAN ARBITRATION ASS'N

Arthur M. East, who has had a wide experience in handling trade relations in various industries, has been appointed director of arbitration service of the American Arbitration Association where he will direct the coordination of arbitration with trade association activities as an effective means of self-government by industry.

The appointment of Charles F. O'Brien as director of the labor-management division also has been announced. Mr. O'Brien has had several years of experience with labor unions and more recently was associated with United Aircraft Corporation.

The strengthening of the Arbitration Association's executive staff is in recognition of the enlarged responsibility that voluntary arbitration will have to carry in the transition period.

American industry flows through fairbanks valves



FOOD... foundation of peace

Before the rebuilding of devastated cities must come the rebuilding of the people. Many branches of the American food industry share in this job — dehydrators . . . canners . . . enrichers and fortifiers of foodstuffs . . . many kinds of processors.

Supplying valves to food processors is an old story to the makers of Fairbanks Valves. Not only are process liquids controlled dependably by Fairbanks valves but the steam lines in these factories' power plants are served by others of different types — as are plumbing and heating lines also.

The food industries typify many industrial fields where Fairbanks bronze and iron body valves give users the benefit of half a century of valve engineering. To see how completely one valve line can satisfy many needs, write for Catalog No. 42.

THE fairbanks COMPANY

393 LAFAYETTE STREET, NEW YORK 3, N. Y.

520 Atlantic Ave., Boston 10, Mass. 748 M & M Bldg., Houston 2, Texas 15 Ferry St., Pittsburgh 22, Pa.

NEW AWARD WILL BE PRESENTED ANNUALLY BY GEO. CUNNINGHAM

A recent announcement which will be of interest to members of TAPPI in Southern California is the Cunningham Annual Award.

The donor, George M. Cunningham, West Coast representative of National Oil Products Corporation, has established this award of $100 to stimulate original thought and work in the papermaking field and the allied industries suitable for presentation in the form of a paper before meetings of Papermakers and Associates of Southern California. The award will be presented at the annual business meeting of PASC.

Conditions (To Prospective Participants)

1. Papers may be submitted only by the Southern California residents who are associated with organizations represented by Active PASC members.

2. Papers must be submitted on or before the third Thursday in February to be competitive for the prize awarded at the annual April Business meeting.

3. To be entered in the competition a paper must meet minimum requirements as to quality, to be left to the discretion of the judges, however, each paper must consist of not less than 500 words. There will be no limitations as to subject matter except that the judge will decide on the interest of the material to Papermaking or its Allied interests.

4. Papers must be submitted in triplicate, typed on one side of the paper only and double spaced. All entries should be sent to the Chairman of the Awards Committee in sealed envelopes and marked G. M. Cunningham Annual Award Entry on the outside of the envelope.

5. Each contestant may submit as many papers as he wishes.

6. Winners are disqualified from competing for two years after winning the prize but may submit papers for honorable mention at any time.

7. Unless six papers from six contestants are submitted which pass the above conditions, the judges will declare no contest and the award will be withdrawn for that year.

8. All papers submitted will become the property of PASC and made available to any member of PASC for inspection after the contest is over. No papers will be returned.

9. The winner will be expected to deliver his paper at the Annual PASC business meeting in April.

Cunningham Award Committee

The Cunningham Award Committee shall consist of five members. Consisting of G. M. Cunningham, donor of the award; Otto Sass the Chairman of the Educational Committee, and three other members. For the first year one of the three appointed members will act on the Committee for one year (Frank Wheelock), one for two years (W. Hartford), and one for three years (W. A. Kinney). After the first year a new member, to act for three years, will be appointed each year by the PASC Chairman to replace the member dropping out. The Chairman of the Award Committee (W. A. Kinney) will also be chosen by the PASC Chairman.

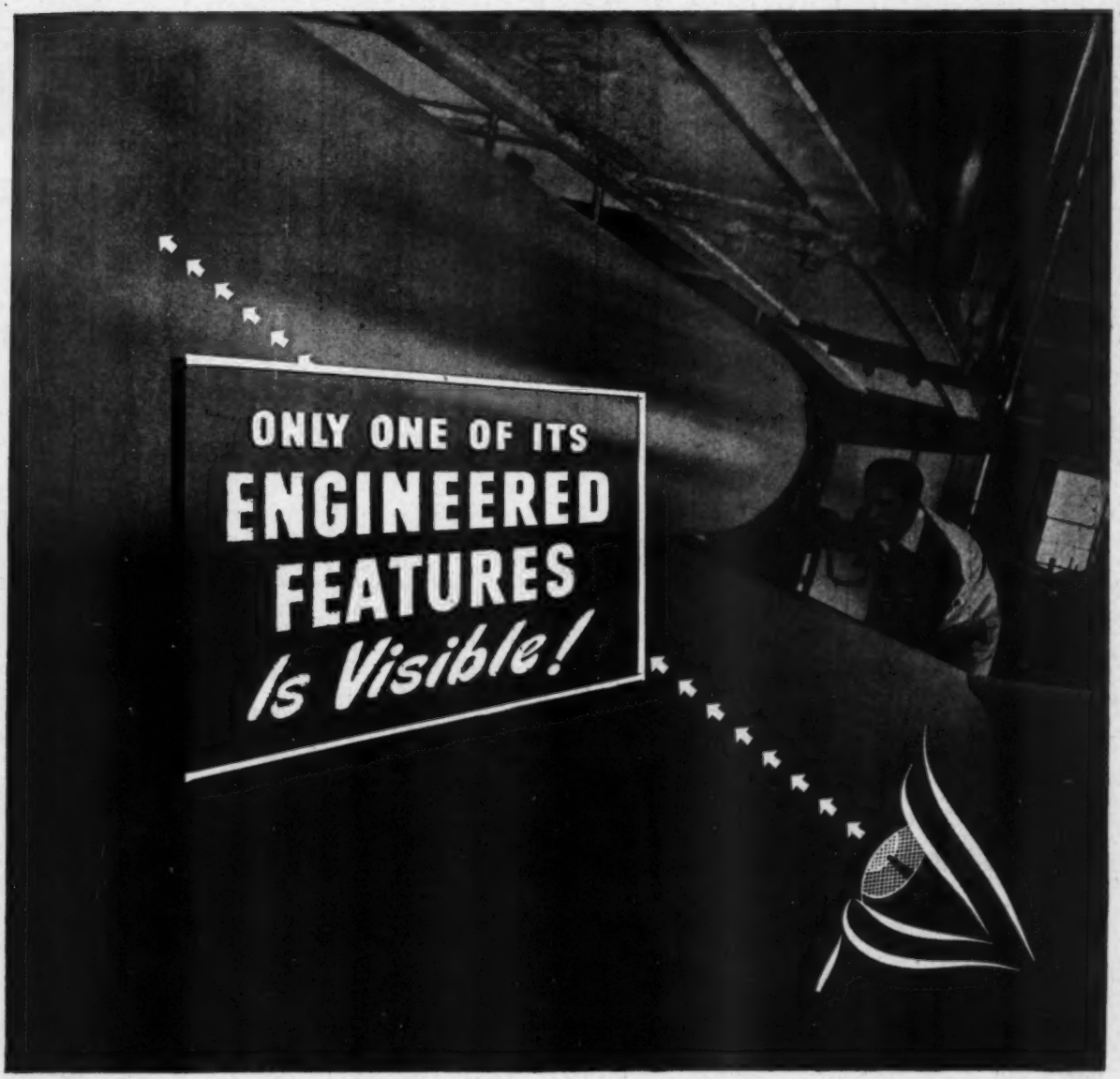
The Awards Committee will act as a steering committee, its action to be approved by the PASC Executive Committee.

The Awards Committee will remove any means of author identification from all papers received and substitute identifying code numbers before papers are submitted to the judges.

Cunningham Award Judges

Three judges will be selected by the Awards Committee. The judges may not be members of the Awards Committee, but must be members of PASC.

WARREN PUMPS
Warren Stock Pump Type 2-SOD-11 and 1-SOD-11
Warren Stock Pump Type 5-SOD-15 . . . 12" suction nozzle
For all Paper Mill Services including
Liquor Pumps in Sulphite, Soda and Kraft Mills
Pulp Stocks up to 7% density
Water pumps for Mill Supply, Showers, White water, Wash-down, etc.
Boiler feed and all other power-plant requirements.
CENTRIFUGAL
RECIPROCATING
Warren Double Suction Pump Single Stage
Warren Machine Chest Pump
Warren Digester Liquor Circulator Type 10-LS-19
Warren Liquor Pump, Type "L" Single-stage, Single-suction
WARREN STEAM PUMP CO., INC.
WARREN, MASSACHUSETTS



The flawless, gleaming surface of this synthetic rubber press roll is indicative of the technical skill with which every U.S. Rubber roll is fabricated. Beneath this polished finish are all the properties requisite to maximum efficiency and service. You'll find that U. S. Rubber Paper Mill Rolls have all the characteristics you're seeking:

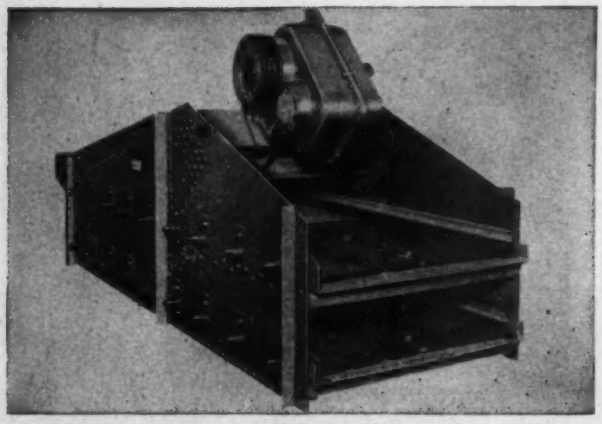
1. *Proper and uniform density*
2. *Maximum resiliency*
3. *Low drift*
4. *Exceptional core adhesion*
5. *Highly polished surface*
6. *Excellent grinding properties*

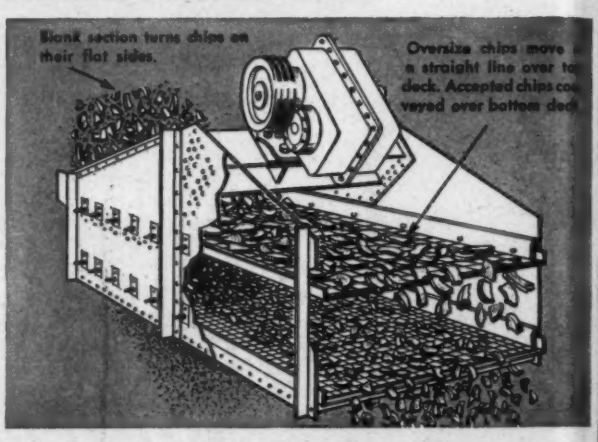
UNITED STATES RUBBER COMPANY

SERVING THROUGH SCIENCE 1230 SIXTH AVENUE · ROCKEFELLER CENTER · NEW YORK 20, NEW YORK

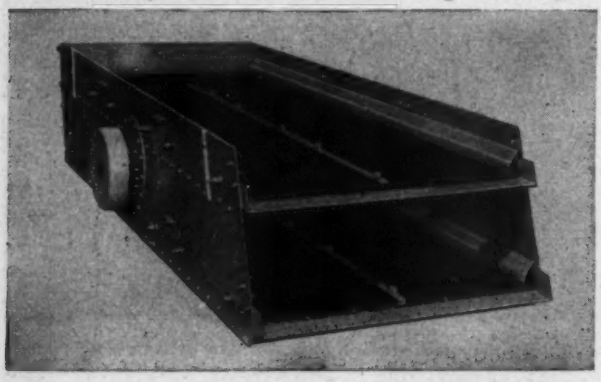
Before You Decide on

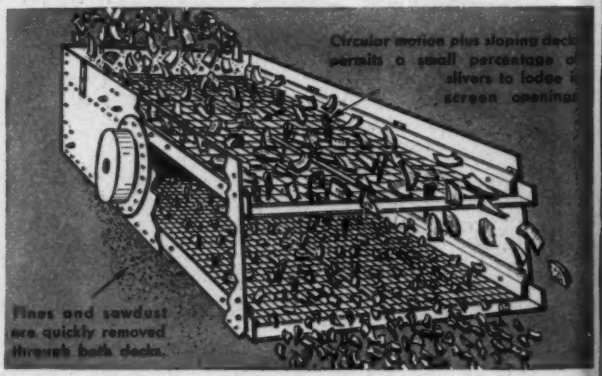
IT PAYS TO RECONSIDER THESE



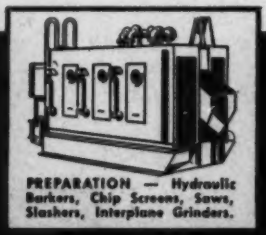

Blank section turns chips on their flat sides.
Oversize chips move in a straight line over top deck. Accepted chips conveyed over bottom deck.

WANT HIGHEST PERCENTAGE OF UNIFORM SIZE CHIPS? Actual mill experience shows "Low-Head" Chip Screen gives you *closer separation* than any comparable screen on market! Secret is *horizontal* operation and *straight-line* vibratory motion — which moves chips in a single direction, on their sides. Long slivers will not turn on edge and lodge in screen openings. "Low-Head" screen eliminates need for *continuous* removal of slivers from deck openings. Its horizontal design requires less headroom and space — lowers installation or remodeling cost.




Circular motion plus sloping deck permits a small percentage of slivers to lodge in screen openings.
Fines and sawdust are quickly removed through both decks.

WANT AVERAGE PERCENTAGE OF UNIFORM SIZE CHIPS? A-C's "Ripl-Flo" Chip Screen, with its 25° *inclined* operation and *circular* vibratory motion, gives you an *average percentage* of uniform size chips. Reason: a small number of slivers will turn on end and lodge in screen openings, requiring periodic removal. For many grades of pulp, "Ripl-Flo" Chip Screen proves entirely satisfactory. It does as good or *better* job than any *inclined* screen — *costs less* than comparable size screens. And it uses *only 2 bearings*. Result: low power requirement, low maintenance.



PREPARATION — Hydraulic Barkers, Chip Screens, Saws, Slashers, Interplane Grinders.

COOKING — Digesters, Blow Tanks, Kilns, Slakers, Heat Exchangers, Condensers.

WET ROOM — vibrating-type screens for use as Thickeners, for dewatering rejects.

PAPER-MAKING — special design Drives for Paper Machines, Rewinders, Calenders.

ALLIS CHALMERS

Chip Screens, IMPORTANT FACTS:

1. What Quality of Screening Job are You Trying to Get?

2. What Type of Chip Screen Will do that Job Best?

ALLIS-CHALMERS can be of *real* help in selecting the type of chip screen that will prove *most economical* for your particular mill requirements.

One reason is that A-C has had wide experience in screening problems — builds the world's broadest line of vibrating screens.

Still another, is that A-C builds *two different types* of chip screens—each designed to meet different needs.

And that's *important.* For in each individual mill, such factors as: the quality of pulp to be produced; type of chippers ahead of screens; available space, etc. — determine the type of chip screen to use.

For helpful preliminary information on selection of chip screens, plus *Screen Questionnaire* for you to fill-in, contact your nearby A-C district office, or write direct for Bulletin B6353. ALLIS-CHALMERS MFG. CO., MILWAUKEE, WIS.

LARGE MILL GETS CLOSE CONTROL OVER COOKING CYCLE

This 6 by 16-foot, double-deck "Low-Head" Chip Screen is operating in the woodroom of an important West Coast Mill.

Mill officials are enthusiastic about "Low-Head" screen performance. Main reasons: 1) they're getting uniform size, clean chips; 2) better control over their cooking cycle; 3) a higher quality of pulp! A 1902

BULLETIN!

HOW TO TAKE A RECONVERSION INVENTORY of your Centrifugal Pumps, Motors, V-Belt Drives — is subject of A-C's newest help to U. S. industry!

Now being offered *free* to all interested individuals in the Pulp and Paper industry, is a *complete Reconversion Inventory Kit* consisting of — *fact sheets* and *check lists,* together with suggestions for inventory procedure.

SEND FOR THESE FREE HELPS TODAY!

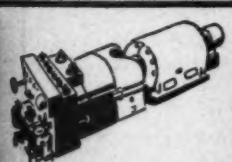
THE NEED. As equipment becomes more widely available, and as you reconvert toward peacetime production, you may be faced with an unprecedented problem of inventory-taking.

You may have to determine, *more quickly* than such a job has ever been done before, the EXACT CONDITION *of every piece of equipment* you propose to use in peacetime production.

For about 4 years, far greater emphasis has been placed on setting production records than on keeping maintenance records. Condition of equipment is often unknown. And because, during wartime, much equipment has been worked 3 and 4 times as many hours a year as in peacetime, even calendar age may mean nothing.

STANDARDS HAVE BEEN SET UP — which apply to *all* makes of equipment — not just A-C's. The Reconversion Kit offers you *standards* which will help you determine which of your units are: (1) okay as is; (2) need new parts; (3) will shortly require replacement; (4) need immediate replacement; (5) need reapplication; (6) are obsolete; or (7) may have parts of second-choice materials dictated by wartime shortages.

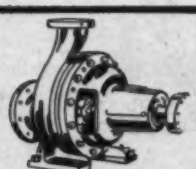
GET YOUR FREE KIT NOW! For your supply of Reconversion Inventory aids, covering Pumps, Motors and Drives, call your nearby A-C district office or distributor, or write direct to ALLIS-CHALMERS, MILWAUKEE.



POWER — all types of Power Generation, Distribution and Control Equipment.

MOTORS & CONTROLS — all types a-c and d-c Motors, ½ to 7000 hp — Gearmotors.

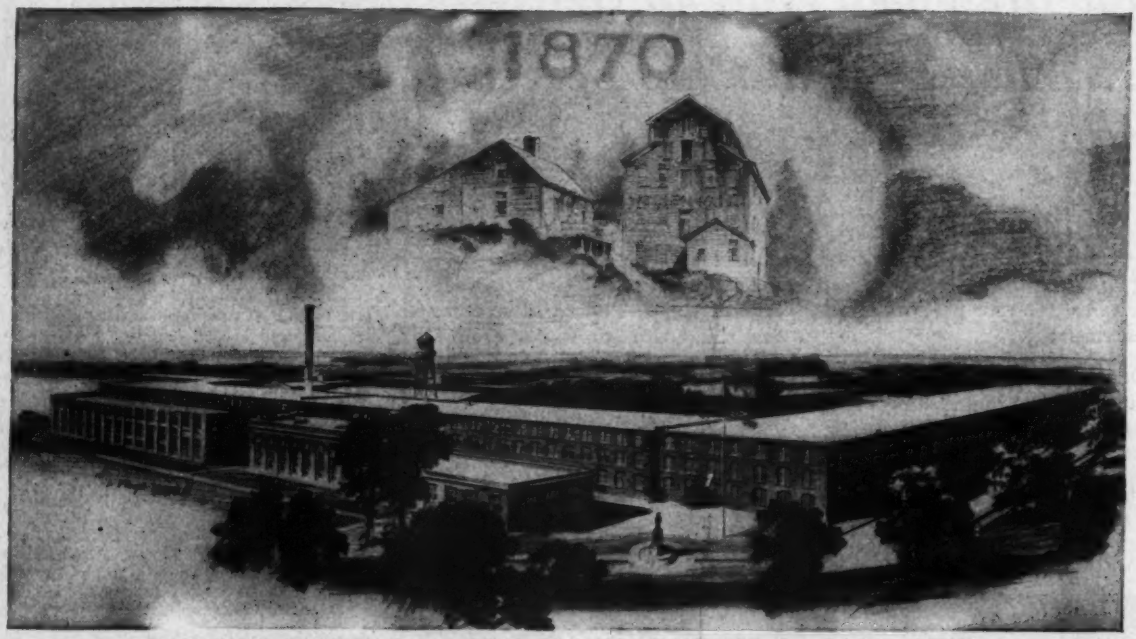
TEXROPE V-BELT DRIVES — fractional to 5000 hp — Constant and Adjustable speed.



PUMPS — Single & Multi-Stage, 10 to 150,000 gpm — Paper Stock Pumps, Fan Pumps.

MILWAUKEE 1, WIS.

75 Years of Paper Progress



KENWOOD MILLS • 75th ANNIVERSARY • 1870-1945

Seventy-five years ago, the American paper industry was just beginning its great period of expansion. Since then paper, at lowering costs and in increasing volume, has changed the course and character of civilization, spreading culture and education, stimulating business, elevating the standard of living. The progress of the paper industry has paced the progress of America.

Also, just 75 years ago, F. C. Huyck & Sons began the manufacture of fine quality papermakers' felts. Recognizing that in wartime and peacetime every paper problem is a felt problem, this organization has pioneered in research and in service, working always in the closest cooperation with the paper industry.

As the world's largest manufacturer of papermakers' felts, F. C. Huyck & Sons, in observing its 75th Anniversary, salutes the paper industry for its magnificent contribution to the winning of the war, and looks forward to a continuation of the policy it has so long pursued, seeking new and better ways to help produce more and better paper—the product most used by man.

F. C. HUYCK & SONS · *Kenwood Mills* · ALBANY, N.Y.

ONE OF 27 DOW CHEMICALS USED BY THE PULP AND PAPER INDUSTRY

50,000,000,000 termites can be wrong!

Fifty billion termites on the loose . . . a real menace to the lumber industry! There are at least that many of these pests throughout the nation, looking for a meal from anything that's made of wood.

Preserving wood from termites and fungi looked like another job for Dowicide. Dow technicians tackled the problem . . . submitted their findings to the lumber industry. In actual practice, it was found that Dowicide-treated lumber resisted termites, rot, and mold for unusually long periods of time . . . stayed clean, was easily handled, non-bleeding, paintable.

Today there's a longer life in store for many wood products—thanks to Dowicide. The range of Dowicide treatments now available offers simple, economical protection of wood from freshly cut logs to finished product.

Not only in the lumber industry, but in many another major field as well . . . paper, paints, leather, textiles . . . Dowicides are providing efficient protection against mold and decay. Bring *your* preservative problem to Dow! We'll be glad to help work out the Dowicide defense that's best for you.

THE DOW CHEMICAL COMPANY

MIDLAND, MICHIGAN

New York • Boston • Philadelphia • Washington • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle

Dowicide

Germicides and fungicides

DOW

CHEMICALS

INDISPENSABLE TO INDUSTRY

SAFETY

CONTEST WINNERS IN THE PAPER AND PULP SECTION

Because the National Safety Conference is not being held this year, the contest data, usually published with the proceedings of the Paper and Pulp Section, have just been released for publication.

The principal interest in this report is, of course, the winners of the trophies and certificates. In the September issue of this magazine (page 910), appears a list of the winners of group trophies awarded by the National Safety Council, as well as a list of those mills that have earned Certificates of Achievement.

The report of the Contest Committee chairman, A. Scott Dowd, usually read at the luncheon meeting of the Paper and Pulp Section, is published herewith. Mr. Dowd's report reveals the name of the winner of the major prize, the Edward Benton Fritz Memorial Trophy.

Data on the 1944-1945 Paper Industry Safety Contest

Two hundred and twenty-one contestants, consisting of 177 paper and pulp mills and 44 paper and board remanufacturing plants completed twelve months of Safety competition on June 30, 1945, in the 21st National Safety Contest of the Paper Industry, sponsored by the National Safety Council.

The general accomplishment in this 1944-1945 Contest was a lower average accident frequency rate than that of the previous year—amounting to a reduction of three per cent by identical contestants.

The average frequency rate of all contestants was 18.14; that of paper and pulp mills (Division I) was 17.89, while that of the paper and board remanufacturing plants (Division II) was 19.80.

Identical contestants in Division I lowered their average rate five per cent from that of the previous year, while those in Division II increased their average rate nine per cent. Groups A, B and C in Division I showed reductions of six, four and five per cent respectively; Group D had an increase of ten per cent.

Fifty-nine contestants, or 27 per cent of the entire enrollment, had frequency rates of less than 10. Thirty of these improved their rates of the previous year, or equaled their previous perfect score of no accidents.

There were five perfect scores of no accidents. Three of these were in Group D of Division I, and two of them were in the Remanufacturing group. The Ashland Division of the Marathon Corporation worked the larger number of man-hours without a disabling injury in the Paper Mill Division, and Bird & Son, Inc., at Shreveport, Louisiana, had the best record in the Remanufacturing group.

The final standing of contestants ranking 1, 2, and 3 in each group is as follows:

Division I—Pulp and Paper Mills

Group A

Mills averaging more than 130 thousand man-hours per month. Enrollment 51; group's average frequency rate, 15.55.

(1) The Flintkote Co., Pioneer Division, rate 1.39.

(2) Consolidated Paper Corp., Ltd., Laudentide Division, rate 1.56.

(3) The Champion Paper & Fibre Co., Hamilton Division, rate 1.84.

Group B

Mills averaging 60 to 130 thousand man-hours per month. Enrollment 44; group's average frequency rate, 18.49.

(1) Consolidated Paper Corp., Ltd., Port Alfred Division, rate 1.44.

(2) Kimberly-Clark Corp., Niagara Mill, rate 2.53

(3) The Flintkote Co., Meridian Mill, rate 2.64.

Group C

Mills averaging 30 to 60 thousand man-hours per month. Enrollment 42; group's average frequency rate, 30.19.

(1) Price Bros. Co., Ltd., Jonquiere Mill, rate 3.13.

(2) Container Corp. of America, Carthage Mill, rate 4.62.

(3) The Flintkote Co., Little Ferry, N. J., rate 8.28.

Group D

Mills averaging 6 to 30 thousand man-hours per month. Enrollment 35; group's average frequency rate, 24.74.

(1) Marathon Corporation, Ashland Division, rate 0.

(1) Strathmore Paper Co., Woronoco Mill No. 1, rate 0.

(1) E. I. du Pont de Nemours Co., Newhall, Me., rate 0.

Division II
Paper and Board Remanufacturing

Enrollment 44, group's average frequency rate, 19.80.

(1) Bird & Son, Inc., Shreveport Plant, rate 0.

(1) Bay West Paper Co., rate 0.

(3) The Flintkote Co., Chicago Heights Plant, rate 1.54.

Sixty-one contestants have won special Reduction Award Certificates from the National Safety Council, having frequency rates below their respective group averages, and showing reductions by comparison with their rates in the previous Contest.

Four of the contestants whose scores were perfect, have had no accidents in their plants for continuous periods of time up to the close of this Contest. Their records are as follows:

Bay West Paper Co., Green Bay, Wisconsin, Division II, 6 years and 19 days

Strathmore Paper Co., Mill No. 1, Woronoco, Mass., Division I, Group D, 8 years and 5 months

E. I. duPont de Nemours & Co., Newhall, Maine, Division I, Group D, 6 years and 18 days

Marathan Corporation, Ashland Division, Wisconsin, Division I, Group D, 4 years, 8 months and 22 days

Handsome trophies donated by the National Safety Council have been awarded to the contestants in each group whose ranks are Number One, including all perfect scores.

Certificates have been awarded to those whose ranks are two and three in each group.

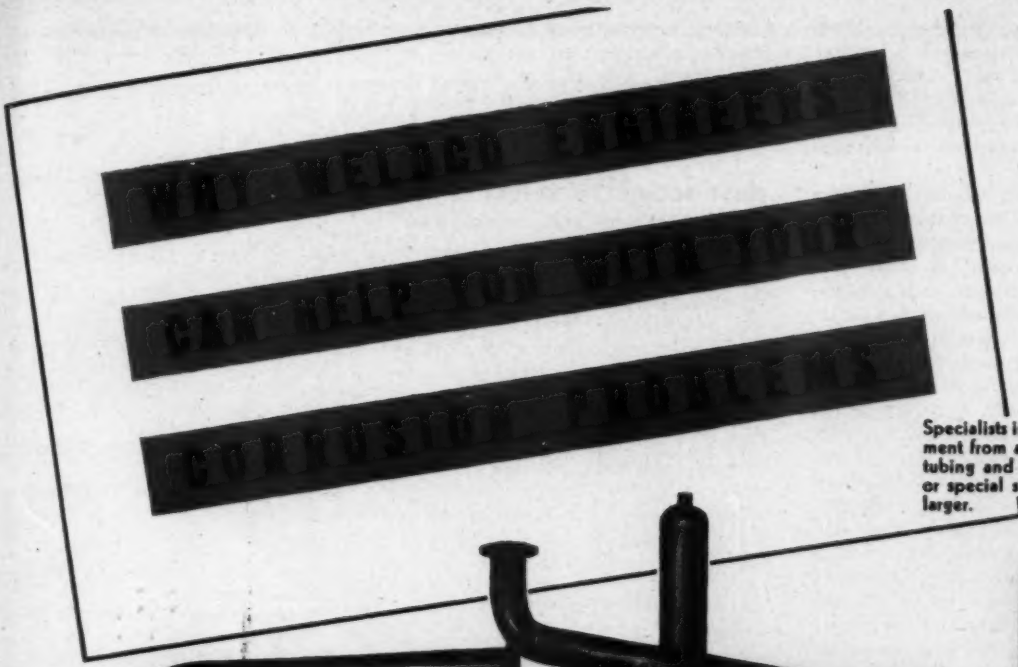
In addition to these awards, are the Certificates of Achievement given by the Council to the 61 contestants that won the Special Reduction Awards.

The winner of the Grand Prize, the Edward Benton Fritz Memorial Trophy, donated by Fritz Publications, Inc., Chicago, publisher of THE PAPER INDUSTRY AND PAPER WORLD, is the contestant which by a majority vote of five judges, named in the Rules, has in their opinion made the best safety achievement among the paper and pulp mill participants in the Contest, based upon frequency, man-hours worked, physical conditions, and other contributing factors.

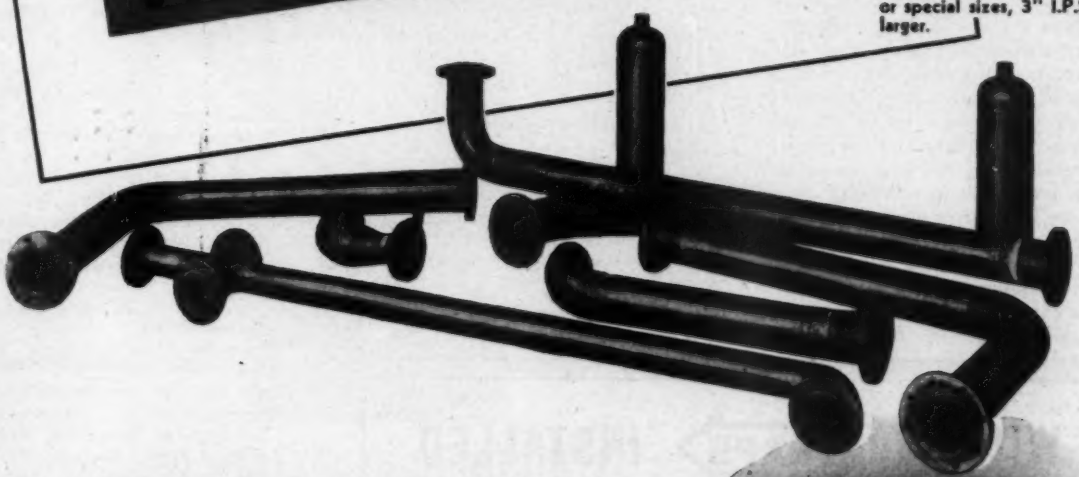
The winner of this Grand Prize in the 1944-1945 Contest is the Ashland, Wisconsin, Division of Marathon Corporation, which, having worked the most hours in its group without a disabling injury during the term of this Contest, tops the list of perfect scores in Group D.

Marathon's Ashland Division manufactures paper for food wrappers and for paper napkins, being one of the largest convertors of paper napkins in the world. A planned safety program systematically embraces all of the Division's 147 employees. Safety is the equal responsibility of management, supervisors and workers. In this plant, management leads the way in the promotion of safety and has made the elimination of hazards and the teaching of safety a part of the foreman's daily routine, and to the foreman this is as important as turning out a quality product and attaining maximum production.

Following a period of nine years in which the plant had a total of 103 lost-time accidents, a safety program was inaugurated, and lost-time accidents were then reduced from 18 during the year 1939 to 1 during the



Specialists in fabricating equipment from alloys . . . Welded tubing and fittings in standard or special sizes, 3" I.P.S. and larger.



If you are using steel now and you are having corrosion and maintenance problems, consider the use of alloys. The Youngstown Welding & Engineering Company engineers have solved many problems during the past 35 years . . . they have increased production and reduced maintenance costs . . . they have added product life to much equipment. Whatever may be your needs for alloy parts or equipment — large or small . . . in quantity or one custom made piece — Weldco facilities are ample. Write today.

THE YOUNGSTOWN WELDING & ENGINEERING COMPANY

3752 OAKWOOD AVE YOUNGSTOWN 9, OHIO

The laboratory reaction kettle, designed and built by us, is an example of Weldco ability to make equipment large or small to customer requirements.

Corrosion resisting processing equipment, tanks, kettles, agitators, and miscellaneous pickling equipment fabricated from alloys . . . custom made. Engineering department will furnish designs.

Weldco chain and accessories, made of corrosion resisting metals. Have been used on tough jobs for years, save costs, increase safety. Standard or special. Literature available.

year 1940. Since October 9, 1940, the plant has maintained a perfect record which as of September 10, 1945, is four consecutive years, 11 months and 1 day—a total of 1,700,519 man-hours without a lost-time accident.

The 1945-1946 Contest is in its fourth month. One change has been made in the Rules, namely: the separation of Division II into two groups. In accordance with this, the following has been added to Rule 2:

Rule 2 (c) Division II shall be divided into two groups: namely,

A. Units averaging 47,501 or more man-hours *monthly*

B. Units averaging less than 47,500 man-hours *monthly*

All participants in the last Contest have been enrolled in the present one.

In reviewing the great progress that has been made by the Paper and Pulp Section of the National Safety Council through its national safety contests that began for a period of one month in August, 1925, and have continued for longer periods in every year since then, the Committee is mindful of the words of Goethe, "Nature knows no pause in progress and development, and attaches her curse on all inaction." To the extent of effort that each manufacturing unit in these contests makes to improve upon its former experience in accident prevention, to the same extent will all the manpower associated with these efforts become more safety conscious.

◆

FIRST SCORES IN SAFETY CONTEST FOR 1945-1946

The Paper Industry Safety Contest for 1945-1946 began on July 1 with all contestants from the former contest enrolled. No July scores were published but the following perfect scores are cumulative for July and August.

According to a change in the rules for the 1945-1946 Contest, Division II, Remanufacturing, has been divided into two groups: A-Units averaging 47,501 or more man-hours *monthly*; B-Units averaging less than 47,500 man-hours *monthly*.

Division I—Pulp and Paper

Group A

Anglo-Canadian Pulp & Paper Mills, Ltd., Quebec, Can.
Fraser Paper Company, Ltd., Edmundston, N. B., Can.
Kimberly-Clark Corp., Niagara, Wis.

Group B

Consolidated Paper Corp., Ltd., Port Alfred, Quebec Can.
The Flintkote Co., Meridian, Miss.
Price Bros. & Co., Ltd., Riverbend, Quebec, Can.
United States Gypsum Co., Greenville, Miss.
West Virginia Pulp & Paper Co., Williamsburg, Pa.
Brunswick Pulp & Paper Co., Brunswick, Ga.

Group C

Price Bros. & Co., Ltd., Jonquiere Mill, Quebec, Can.
Certain-teed Products Corp., E. St. Louis, Ill.
Container Corp. of America, Carthage, Ind.
The Mead Corp., Harriman, Tenn.
Certain-teed Products Corp., Niagara Falls, N. Y.
Certain-teed Products Corp., Richmond, Calif.
Central Fibre Products Co., Hutchinson, Kans.

Group D

United States Gypsum Co., Lisbon Falls, Maine.
The Mead Corp. (Wheelwright Div.), North Leominster, Mass.
The Flintkote Co., Little Ferry, N. J.
Marathon Corp., Ashland, Wis.
Strathmore Paper Co. (Woronoco Mill No. 2), West Springfield, Mass.
United States Gypsum Co., Oakmont, Pa.
E. I. du Pont de Nemours & Co., Inc. (Russell Plant).
Certain-teed Products Corp., Kansas City, Mo.
Rogers Fiber Co., Inc., Bar Falls, Maine.
Strathmore Paper Co. (Woronoco Mill No. 1), West Springfield, Mass.
The Mead Corp., Nashville, Tenn.
Central Fibre Products Co., Tama, Iowa.
Container Corp. of America, Wilmington, Del.
Ward Paper Co., Merrill, Wis.
E. I. du Pont de Nemours & Co., Inc. (Newhall Plant), Wilmington, Del.

Division II—Paper & Board Remanufacturing

Group A

The Flintkote Co., E. Rutherford, N. J.
Container Corp. of America, Cleveland, Ohio.
Container Corp. of America (35th St. Div.,), Chicago.
Bird & Son, Inc. (Roofing Plant), Norwood, Mass.

Group B

Old Colony Envelope Co., Westfield, Mass.
Fort Wayne Corrugated Paper Co., Hartford City, Ind.
Bird & Son, Inc. (Roofing Plant), Chicago.
Kimberly-Clark Corp. (Atlas Mill), Appleton, Wis.
The Flintkote Co. (Hollywood Paper Box Div.), Los Angeles, Cal.
Fort Wayne Corrugated Paper Co., Chicago.
Iowa Fiber Box Co., Keokuk, Iowa.
Freeman Paper Co., Green Bay, Wis.
Bay West Paper Co., Green Bay, Wis.
Bird & Son, Inc. (Roofing Plant,), Shreveport, La.

With VORTRAPS INSTALLED

WON'T GET YOU DOWN

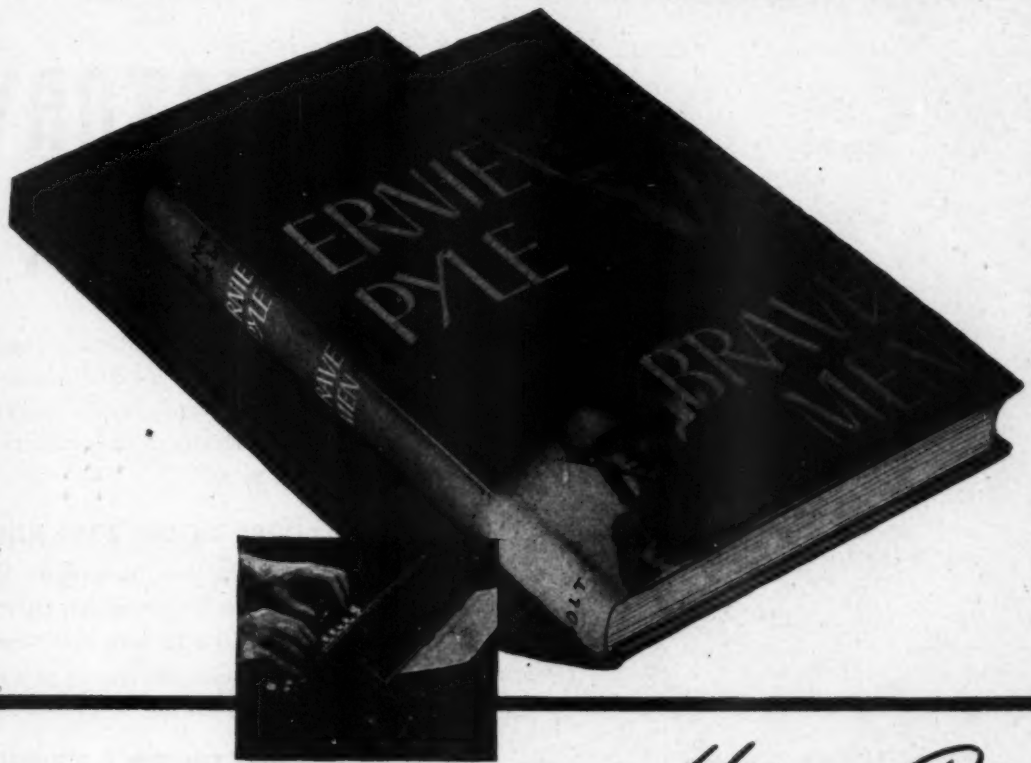
Over 300 pulp and paper mills have over 2000 Vortraps working continuously—24 hours a day—removing objectionable material from their stock. For, today stock is dirtier than ever.

Vortrap equipped mills not only find Vortraps a simple, effective and economical means of removing objectionable dirt but a worthwhile means of substantially lengthening the useful life of wires and felts.

Vortraps have no moving parts, use little power, require practically no labor to operate and occupy little space.

NICHOLS
ENGINEERING & NERCO RESEARCH CORP.
60 WALL TOWER
NEW YORK 5, N. Y.
UNIVERSITY TOWER BLDG.
MONTREAL, P. Q.

THE BEST SELLER STARTS ON WHITE PAPER...



...AND WHITENESS STARTS WITH *Helmerco Blue!*

Today's white bond, writing, book and ledger papers possess a high whiteness of shade that yesterday's papers never knew, when they're tinted to a pure white perfection with Helmerco Blues.

Helmerco Blues have excellent working properties in any furnish. Added directly to the beater, they disperse immediately, giving a broad range of white shades having good light fastness and excellent brightness. Helmerco Blues give white papers premium quality whiteness, at a minimum color cost. Fine light blues in the same group of papers can also be produced with Helmerco Blues.

H & M Technical Service Department is always ready to cooperate with you in developing special dyes for specific paper problems, or in supplying desired information on the correct usage of H & M colors.

RANGE OF HELMERCO BLUE SHADES FROM RED TO GREEN

M 4 R Conc.	2 G B Conc.
M 2 R W Conc.	M 2 G Conc.
M G W Conc.	M 4 G Conc.
M G Conc.	M 5 G

COLORS BY

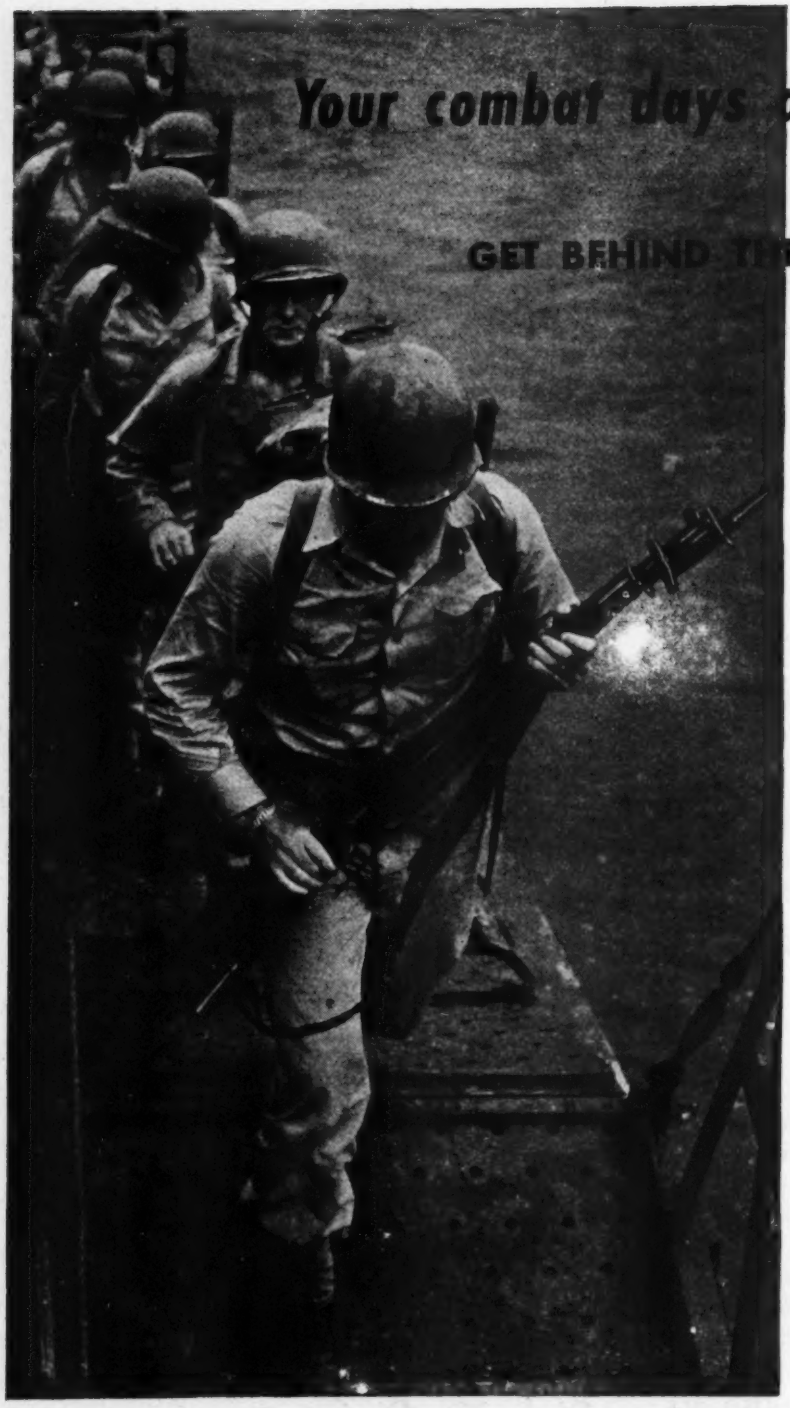
CALCO

Heller & Merz Department

CALCO CHEMICAL DIVISION • AMERICAN CYANAMID COMPANY

Bound Brook, New Jersey

New York • Chicago • Philadelphia • Boston • Charlotte • Providence



VICTORY LOAN!

There's plenty of action ahead for fast-thinking industrial leaders in putting over the new Victory Loan! Your Victory drive is important because:

EVERY VICTORY BOND HELPS TO

1. Bring our boys back to the America for which they were willing to give their lives!
2. Provide the finest of medical care for our wounded heroes!

BOOST THE NEW F. D. ROOSEVELT MEMORIAL $200 BOND!

Urge all your employees to buy this new Franklin Delano Roosevelt Memorial $200 Bond through your Payroll Savings Plan! At all times better than ready cash, Victory Bonds are industry's "Thanks" to our returning heroes!

START YOUR VICTORY DRIVE TODAY!

Every Victory Bond aids in assuring peacetime prosperity for our veterans, our nation, your employees—and your own industry!

The Treasury Department acknowledges with appreciation the publication of this message by

VICTORY LOAN

The Paper Industry and Paper World

★ *This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and War Advertising Council* ★

APP-WELD
PATENTED
SEAMLESS
JOINT
plus 50 years experience means
Appleton Wires are Good wires
APPLETON WIRE WORKS, INC. APPLETON, WIS.

PERKINS RESEARCH

keeps pace with INDUSTRIAL PROGRESS

PERKINS

CALENDER ROLLS

B. F. PERKINS & SONS, INC.

HOLYOKE · MASSACHUSETTS

A FEW TIRED VALVES

CAN MAKE A WHOLE PLANT DOZE . . .

Worn-out valves at vital control points could make your entire plant lay down on the job. Valve failure is almost certain to interrupt work while repairs or replacements are made. Often it means ruin to materials in process. Sometimes, it brings serious danger to equipment and personnel.

Many valves which were nearing the retirement state before the war may now be dangerously close to complete collapse, as a result of carrying the abnormal service loads of wartime production. Trying to "revive" such valves is seldom worth the money and labor required.

HOW TO SPOT "CRIPPLES" BEFORE THEY PUT YOU ON THE SPOT

Write for samples of the "Valve Record Sheets" prepared by Jenkins Engineers. Jot down the age and condition of every critical valve in your plant – its "trouble" record – and the cost of labor and parts for repairs. In this way you very quickly locate the points where new valves should be provided.

REPLACE WITH JENKINS VALVES . . . TO TAKE A LOAD OFF YOUR MIND . . . AND COST SHEET

For nearly a century Jenkins Valves have given dramatic demonstration of their low cost by remarkably long service records in thousands of installations throughout America. Jenkins Bros. better materials, better design, and better workmanship have always made a better valve. Over 600 patterns for every service are shown in the Jenkins Catalog.

Jenkins Bros., 80 White Street, New York 13; Bridgeport, Conn.; Atlanta, Boston, Philadelphia, Chicago, San Francisco. Jenkins Bros., Ltd., Montreal, London.

LOOK FOR THIS JENKINS DIAMOND MARK

JENKINS VALVES

SINCE 1864

For every Industrial, Engineering, Marine, Plumbing-heating Service . . . In Bronze, Iron, Cast Steel and Corrosion-resisting Alloys . . . 125 to 600 lbs. pressure.

Sold Through Reliable Industrial Distributors Everywhere

JENKINS BROS., 80 White St., New York 13, N. Y.

Please send me a set of the Jenkins "Valve Record Sheets"

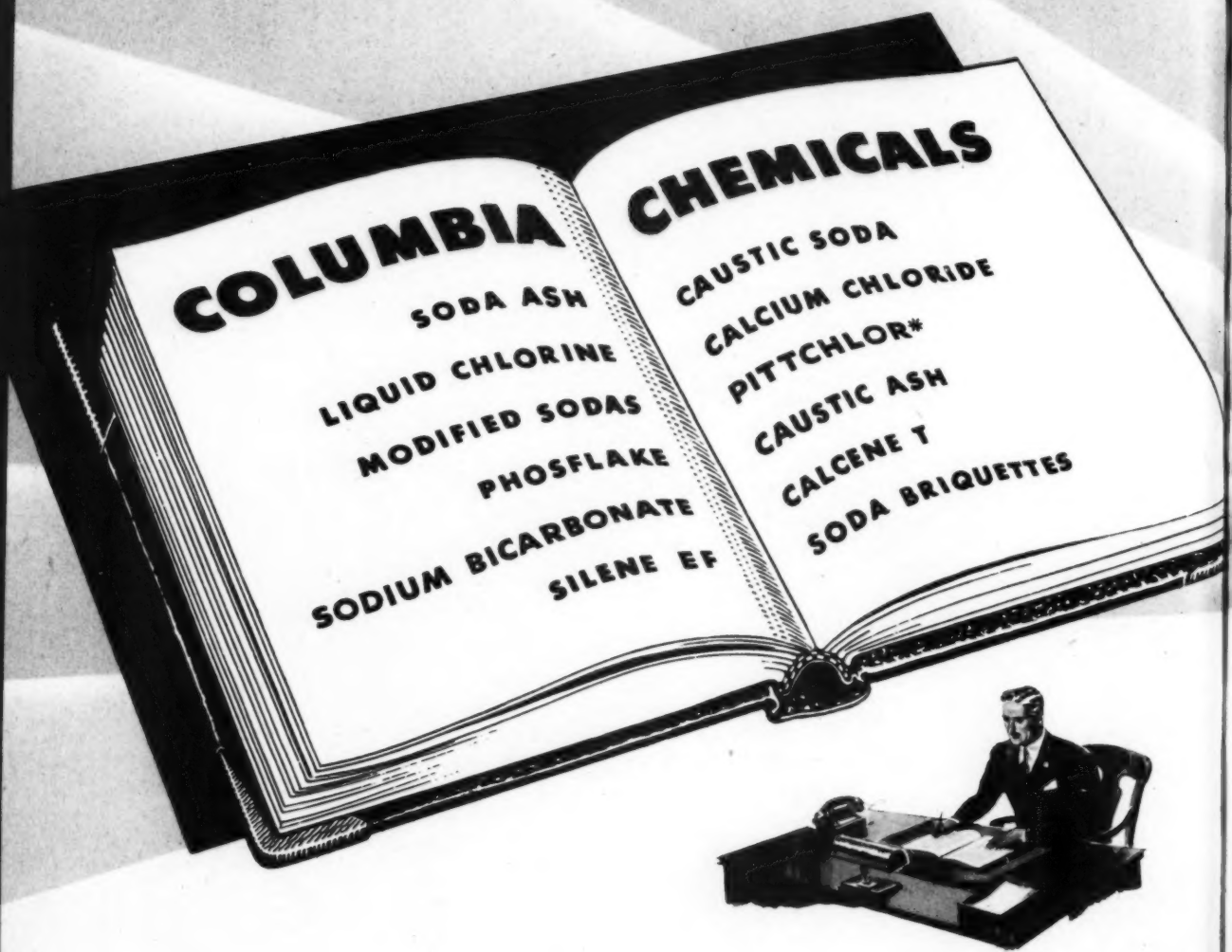
Name .....

Company .....

Address .....

.....

A Good List for Your Book



Columbia's modern production processes are carefully controlled . . . packaging and shipping are efficiently planned and supervised • Columbia plants are favorably located . . . distribution facilities are organized for excellent service • Columbia policies contribute to enduring business relationships.

That's why Columbia alkalies and related chemical products constitute a "good list for your book."

**High Test Calcium Hypochlorite*

COLUMBIA CHEMICALS

COLUMBIA ESSENTIAL

Soda Ash • Caustic Soda • Sodium Bicarbonate • Liquid Chlorine • Silene EF (Hydrated Calcium Silicate) • Calcium Chloride

Getting back into "Civvies" with a brand-new name

PITTCHLOR

Columbia high-test Calcium Hypochlorite—*now known as* PITTCHLOR—has seen service on every American front . . . is on duty at hundreds of military camps and posts. Requirements of the Army, Navy and Marines for quick, effective sanitation and water purification will be supplied, but PITTCHLOR now is available for civilian uses, in a new suit of "civvies"—an attractive red, white and blue 5-lb. re-sealable can, convenient to use.

PITTCHLOR contains over 70% available chlorine, is stable, non-caking and free-flowing, can be used for quick preparation of disinfectant, germicide, deodorant and bleach solutions . . . for the shrink-resistance treatment of woolens.

Distributed through leading jobbers—also furnished in 3¼-lb. cans and 100-lb. drums.

PITTSBURGH PLATE GLASS COMPANY

COLUMBIA CHEMICAL DIVISION

GRANT BUILDING, PITTSBURGH 19, PENNSYLVANIA

Chicago • Boston • St. Louis • Pittsburgh • New York • Cincinnati • Cleveland • Philadelphia • Minneapolis • Charlotte • San Francisco

INDUSTRIAL CHEMICALS

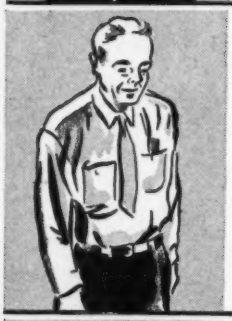
Soda Briquettes • Modified Sodas • Caustic Ash • Phosflake • Calcene T Precipitated Calcium Carbonate • Pittchlor

Industrial LOGISTICS*

Creates New Savings in all 3 Divisions of your Business—*This Way:*—

1—PROCUREMENT

Your Director of Purchases can head off load-handling wastes at your sources of supply by ordering goods assembled in maximum units (Master Loads), shipped on Pallets or Skids—thus insuring quick, low-cost unloading and storing upon arrival.



2—PRODUCTION

Industrial Logistics provides a "refresher course"—new ideas on standardizing *all* goods into basic, economical-to-handle forms; ways to transport more of them per trip on Pallets or Skids; plans for high-tiering them in warehouse or storage.

3—DISTRIBUTION

New "ammunition" for your Sales Manager, too. Many of your customers are large Truck users—thus *your* product on Pallets or Skids arrives ready for immediate, low-cost unloading and handling. Try this idea on your "preferred customers" before they request it of you!

* The science of assembling and handling materials to insure maximum economies at every stage of (a) Procurement, (b) Production and (c) Distribution, using Elwell-Parker Electric Trucks, Tractors and Cranes;

Employing the correct containers (Boxes, Barrels, Bags or Bales) in Master Unit Loads, on Pallets or Skids;

To insure Greater Speed—Faster Production—Greater Turnover—Increased Safety—New Profits.

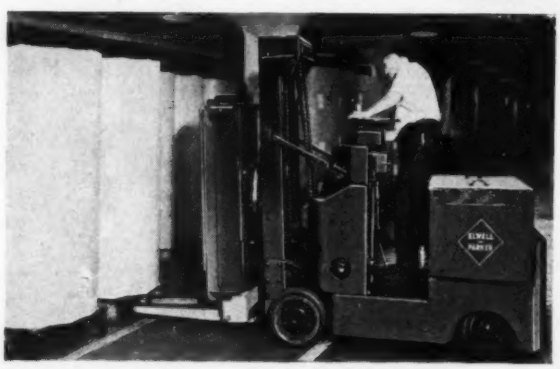
IT'S a partnership—this job of detecting places in your operations where wastes can be scotched, new savings created. So bring your key men—including the 3 Executives at the left—into the "treasure hunt!"

Start each to thinking about practical ways of simplifying load-handling; then team up their thinking in the common interest of Company savings. Soon you will have a flood of sound, workable ideas—will start making Industrial Logistics a positive, vital method of enforcing new economies wherever you transport materials during processing.

Industrial Logistics opens doors to long-planned economies. Open *your* door to the Elwell-Parker Materials-Handling Consultant. His suggestions many times have led to savings large enough to completely pay within months for the Elwell-Parker Equipment installed on his recommendations.

Dial the Materials-Handling Consultant Today!

The Elwell-Parker Electric Co., 4241 St. Clair Ave., Cleveland 14, Ohio.



© 1945 The Elwell-Parker Electric Co.

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

By FAIRBANKS-MORSE

Here's what that means to you. **In addition to sustained high efficiency pumping equipment—with its operation designed to do your particular job—you get three major advantages from Fairbanks-Morse Complete Pumping Units.**

1. **Combined Responsibility.** Designed and built in one factory, pump and driver (motor or engine) are perfectly matched and covered by a single guarantee.
2. **Successful UNIT Performance.** Tested in one plant under expert engineering supervision, pumps and drivers assure you superior operation.
3. **Service from ONE Source.** One engineer is familiar with the entire installation—no question as to who makes any adjustments or repairs.

You get these major advantages from Fairbanks-Morse . . . because only Fairbanks-Morse designs and builds all components of an outstanding line of complete pumping units.

To see a qualified engineer about any pumping job, write Fairbanks, Morse & Co., Fairbanks-Morse Building, Chicago 5, Illinois.

Fairbanks-Morse

A name worth FM *remembering*

Diesel Locomotives • Diesel Engines
Scales • Motors • Pumps • Generators
Magnetos • Stokers • Railroad Motor Cars and Standpipes • Farm Equipment

NAMES in the NEWS

Personals

STATES D. TOMPKINS HEADS CARTON DEPT. OF UNITED PAPERBOARD CO.

The appointment of States D. Tompkins as manager of the Carton Department of the United Paperboard Co. has been announced by Harold W. Kephart, vice president in charge of sales.

For ten years production manager of the Foil Carton Division of Reynolds Metals Co., and previous to that production manager of the Shuttleworth Carton Co., Mr. Tompkins has had 23 years' experience in the folding box and carton industry. Joining Shuttleworth, Keiller and Co. of New York in 1922 (later known as the Shuttleworth Carton Co.), he first occupied the position of clerk, later

States D. Tompkins

became a machine operator, then plant manager, and finally department manager. Passing through all phases of manufacturing and plant management, he received thorough training and gained valuable experience in the production of folding boxes and cartons. As production manager of the Foil Carton Division of Reynolds Metals he made important contributions to the development of protective packaging, the progress of which has been enhanced and accelerated by the Armed Forces' packaging program.

Mr. Tompkins' long association with the industry goes back to his early childhood. His father, the late States D. Tompkins, Sr., was founder and partner of Miller-Tompkins and Company, manufacturer of paper bags and paper sacks.

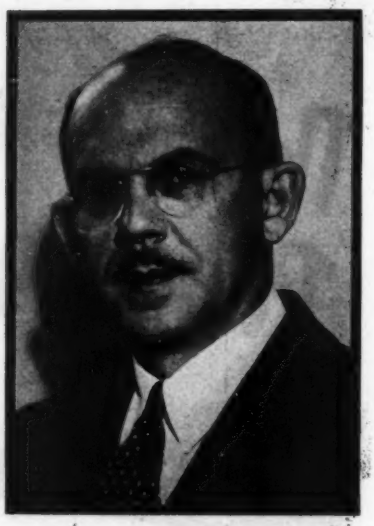
He will make his headquarters at United Paperboard general offices, 285 Madison Avenue, New York.

◆

BURTON L. KASSING BECOMES A PROFESSOR AT N. Y. STATE COLLEGE

Burton L. Kassing, for the past twelve years paper mill superintendent of the Hammermill Paper Company, Erie, Pennsylvania, has resigned from this position to accept a professorship in the Department of Pulp and Paper Manufacture at the New York State College of Forestry, Syracuse University, Syracuse, New York. He will succeed W. Oury Hisey who has resigned to undertake consulting work in the paper industry at Johannesburg, South Africa.

Mr. Kassing received his B.S. degree with the first class in papermaking at the College of Forestry, in 1923. He was awarded the Hammermill Fellowship in Papermaking and returned for graduate study, completing his work for the M.S. degree in 1925. During



Burton L. Kassing

vacation periods while in college, he worked as a control tester in the Hammermill plant, at Erie, Pennsylvania, and accepted permanent employment with that company upon graduation. Successively he occupied position with this company as research chemist, assistant chief control chemist, beater engineer, paper machine operator,

The President Presents Paper Mill Chemist with Congressional Medal of Honor

President Truman congratulates Capt. James M. Burt, to whom he has just presented the Congressional Medal of Honor for gallantry and intrepidity in action, above and beyond the call of duty.

Capt. Burt, a chemist with the Hurlbut Paper Company, South Lee, Mass., prepared for his paper mill chemistry with a B.S. degree at Norwich University.

He was a captain in a tank unit, but he dismounted twice when tanks, the decks of which he was riding, were disabled and took command of infantry troops in the attack on Aachen. He was wounded three times, but is able to resume his position at Hurlbut.

For Piping Equipment . . . Any Kind . . . it Pays to Rely on CRANE

ONE SOURCE OF SUPPLY • ONE RESPONSIBILITY • ONE STANDARD OF QUALITY

Rebuilding piping systems . . . and keeping them at peak efficiency . . . is made a lot easier by using Crane *complete* piping materials service. One order—to your Crane Branch or Wholesaler—can cover *all* your valves, fittings, pipe, piping accessories and fabricated assemblies. You can choose from the world's greatest line of brass, iron, and steel equipment. One standard of quality in all materials—and one responsibility behind them—helps insure getting the best installation. At the same time, you get the benefit of Crane Co.'s 90-year experience. Below is an example of how one typical valve in the Crane line is applicable to many of your needs.

Water Treating Unit

SERVICE RECOMMENDATIONS: ***Crane Standard Iron Body Globe and Angle Valves*** meet all general service requirements with working pressures up to 125 pounds steam. Brass-trimmed valves are recommended for steam, water, and fluids non-corrosive to brass or iron; all-iron valves for fluids that corrode brass but not iron. Also available with choice of composition discs for steam, hot water, cold water, air, oil, and other services. In all sizes from 2 in. up—with screwed or flanged ends. See your Crane Catalog for specifications.

CRANE CO., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. *Branches and Wholesalers Serving All Industrial Areas*

CRANE VALVES • FITTINGS • PIPE
PLUMBING • HEATING • PUMPS

technical assistant to superintendent of paper mill, assistant superintendent of paper mill, and since 1933, superintendent of the paper mill. Mr. Kassing completed extension courses in mechanical and electrical engineering at Penn State College in addition to several foremanship training programs. Recently he has been acting as instructor in this subject for the War Man-Power Commission in Erie. Mr. Kassing's wide practical experience in the paper field will be an invaluable asset to the rapidly expanding programs of instruction and research at the College of Forestry.

Several other staff changes in the Pulp and Paper Department of the College have been announced. Carmin P. Donofirio, a 1939 graduate of the College, has been advanced from instructor to assistant professor. C. Vernon Holmberg, M.S. in 1939, has been given a temporary appointment as Instructor, substituting for Dr. Edwin C. Jahn who is taking sabbatical leave of one year in Sweden. Following graduation, Mr. Holmberg was employed by the American Viscose Corporation at Marcus Hook, Pennsylvania, and later in the research laboratory of the Crossett Paper Company at Crossett, Arkansas. The Pulp and Paper Department of the New York State College of Forestry is under the direction of Professor Clarence E. Libby.

◆

HOWARD F. MacMILLIN NOW WITH ARTHUR D. LITTLE

Howard F. MacMillin, formerly president and general manager of the Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio, has become associated with Arthur D. Little, Inc., Cambridge, Massachusetts.

Howard F. MacMillin

Mr. MacMillin will direct the application to industry of developments in the mechanical engineering and applied physics fields by the Little laboratories, which at present will concern particularly the conversion to peacetime uses of important equipment and processes developed during the war.

◆

RICHARD SHIPLEY NOW WITH NATIONAL CASEIN

The appointment of Richard L. Shipley as director of sales and research for its Eastern Sales Division has been announced by National Casein Company, Chicago.

Mr. Shipley's new duties involve the supervision of the company's eastern sales of resin glues, casein, special adhesives, wood fillers and glue brushes,

Richard L. Shipley

with headquarters at 1340-48 Chestnut Street, Philadelphia.

Well known in the casein industry, Mr. Shipley acted as administrator of WPB allocation orders governing distribution and use of casein, phenolic resin adhesives, resorcinol resin glues, urea and melamine resins for adhesives, textile finishes, and paper treatment. Prior to his work with the Government, Mr. Shipley was a developmental chemist at the University of Michigan, testing glues and plywood for the plywood industry.

◆

LEON M. YOERG RESIGNS AS PRESIDENT OF A.W.P.

Leon M. Yoerg, for the past eight years president of the American Writing Corporation at Holyoke, Massachusetts, has resigned, due to ill health, but will continue with the company as a director and executive consultant.

Leon M. Yoerg

The chairman of the board, Thomas Harper Blodgett of New York, will assume the office of president and E. C. Reid, vice president in charge of manufacturing, has been added to the board of directors.

Mr. Yoerg's career in the industry, during which he visited most of the important papermaking centers in America and Europe, began with his apprenticeship at the age of thirteen with the Hampshire Paper Company where Charles Southworth was president. After thirteen years with Hampshire, he transferred to the Carew Manufacturing Company in South Hadley Falls, which was under the same management as Hampshire, and there became mill superintendent at the age of twenty-six, and later plant manager.

He resigned in 1923 to join the American Writing Company as vice president in charge of manufacturing and was there associated with the late Sidney L. Willson. In 1937, when the company was reorganized as American Writing Paper Corporation, he became president.

◆

HENDLEY BLACKMON RESIGNS FROM WESTINGHOUSE STAFF

Important personnel changes in editorial service have just been announced by Westinghouse Electric Corporation. The resignation of Hendley Blackmon, manager of editorial service became effective November 1. Mr. Blackmon has become associated with McGraw-Hill Publishing Company as electrical editor of *Product Engineering*.

Mr. Blackmon has been connected with Westinghouse since his graduation from Georgia Tech in 1925 as an electrical engineer. Following service as an engineer in switchboard engineering department in 1932 he was

SWENSON
Digester Blow CONDENSERS

●

Heat Recovery Systems for Wood Pulp Mills

Swenson design gives more even distribution of steam over the surface of vertical tubes in the condenser . . . making possible maximum recovery of heat from steam released in the digester blow tank.

Any pulp carried over with the blow steam is effectively removed by a centrifugal separator integral with the condenser. The tubes are thereby kept free of fibres. There is no cleaning problem.

The indirect absorption of heat provides uncontaminated hot water for pulp washing and other mill uses. The Swenson arrangement will provide hot water at a constant flow and constant temperature.

Operation is automatic—synchronized with blowing cycles.

Maintenance is low. (Tube life and performance are greatly increased by the use of chromium plated tubes.)

Atmospheric and stream pollution are minimized.

Pulp Washers . . Black Liquor Evaporators
Lime Sludge Filters . . Causticizing Equipment

SWENSON
SWENSON EVAPORATOR COMPANY
Division of Whiting Corporation
15653 Lathrop Avenue, Harvey, Ill.

named technical editor of the company's Technical Press Bureau, and since 1938 he has been manager of Westinghouse Editorial Service. In his new position, Mr. Blackmon will be located in the McGraw-Hill Building, 330 W. 42nd Street, New York City.

Pending the return of Lt. Carl Nagle, now on duty with the U. S. Navy, H. C. McDaniel will act as supervisor of editorial service and will be responsible for the company's technical and trade magazine publicity activities. Lt. Nagle joined Westinghouse Editorial Service in 1941; Mr. McDaniel has been a member of the editorial service staff since 1943.

◆

▶▶▶ The E. P. Lawson Company announces the addition to its staff of *Herbert W. Blomquist*, who will serve in an executive capacity in the sale of the new Lawson Cutting Machine,

Herbert W. Blomquist

now in production. Mr. Blomquist was former chief of Machinery Section, Printing and Publishing Branch of the WPB. He will make his headquarters in the Lawson Company's New York Offices.

◆

WM. M. RAND ELECTED PRESIDENT OF MONSANTO

Succeeding Charles Belknap, who continues as executive committee chairman of the company, William McNear Rand has been elected president of Monsanto Chemical Company, St. Louis, Missouri.

Mr. Rand became associated with Monsanto in 1929 when it purchased the stock of the Merrimac Chemical Company of which he was treasurer and sales vice president. In 1935, he became executive vice president, and the same year, president of Merrimac

Wm. M. Rand

which then operated as a Monsanto subsidiary.

In 1937, the Merrimac Chemical Company was liquidated and it became Monsanto's Merrimac Division. Mr. Rand now became vice president of Monsanto Chemical Company and general manager of the Merrimac Division. In 1943, he was transferred to St. Louis when he became a member of the executive committee.

Mr. Rand is a graduate of Harvard University, a veteran of world war I, and a member of many professional, educational and social organizations.

◆

CHAS. DAVIDSON NOW V.P. OF WHITING AND CO.

Charles Davidson, Jr., has been elected vice president of Whiting and Company, Inc., affiliate of the Whiting Paper Company, Holyoke, Massachu-

Charles Davidson, Jr.

setts, and operator of the Whiting No. 3 mill. Mr. Davidson will continue his duties as general manager of the mill.

Mr. Davidson started his papermaking career with the Neenah Paper Company, Neenah, Wisconsin. Later, he was with the Strathmore Paper Company and was superintendent of the Southworth Paper Company before he became superintendent of the Whiting No. 3 mill in 1933.

◆

ALFRED WATT LEAVES BROWN CO. TO BECOME PERSONNEL DIR. AWP

The new personnel director of the American Writing Paper Corporation, Holyoke, Massachusetts, is Alfred Watt, formerly with the Brown Company, Berlin, New Hampshire.

Mr. Watt was with the Brown Com-

Alfred Watt

pany for 25 years. From 1920 to 1936 he was in the manufacturing department, engaged in chemical work and sales promotion and development. He went to the employment department in 1936, developing a personnel department. He became personnel director in 1930.

◆

ST. REGIS NAMES VAYO AS MANAGER OF ITS PULP SALES AND EXPORT DEPT.

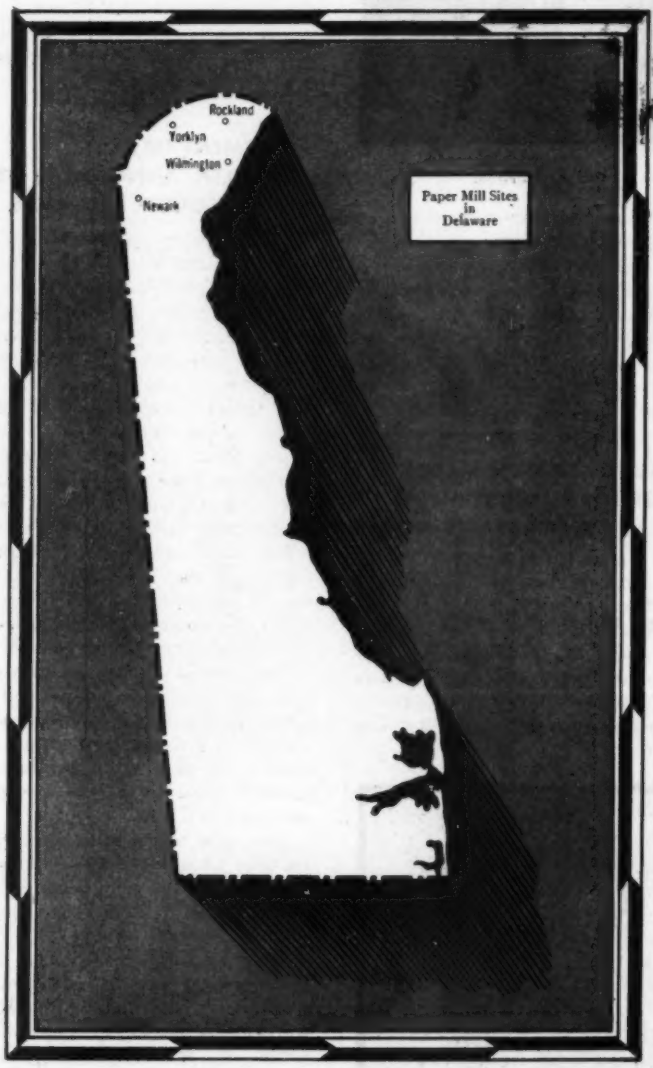
R. L. Vayo has been named manager of the Pulp Sales and Export Department of St. Regis Paper Company, with headquarters at the main offices, New York City.

Mr. Vayo started in the paper industry with Brown Company, Portland, Maine, in 1929; he became assistant manager of the foreign depart-

Draper's

ATLAS OF AMERICAN PAPERMAKING

No. 10 PUBLISHED BY DRAPER BROTHERS COMPANY • CANTON, MASSACHUSETTS



HIGH LIGHTS:

Delaware, a pioneer State in papermaking, is more important historically than commercially in the paper industry in which she ranks twenty-fifth. So far as is known, the first mill was that of Joshua and Thomas Gilpin at Wilmington, established in 1787.

These ingenious and enterprising papermakers apparently made fast progress, for De Warville, the French statesman who visited Wilmington in 1788, wrote in his *Travels in the United States*, "Their process in making paper, especially in grinding rags is much more simple than ours. I have seen specimens of their paper, both for writing and printing, equal to the finest made in France."

Thomas Gilpin may have known about John Dickinson's cylinder machine, built in England in 1809, when he invented one himself and had it built in 1816. It "would do the work of ten vats, and delivered a sheet of greater width than any other made in America of any required length." Antedating the first importation of a Fourdrinier machine by eleven years, this first American paper machine is most memorable. It brought riches and fame to its inventor. In a description published in *The Casket of Flowers* in 1828, at Philadelphia, this machine is said to have produced "the finest sheet of paper by an almost instantaneous process at the rate of sixty feet per minute."

After surviving one great flood and a bad fire, the mill was so badly damaged by another flood in 1838, its aging owners then sold the property to a cotton manufacturer, thus closing one of the most brilliant careers in the annals of American papermaking.

Delaware has 6 paper mills; 10 Fourdriniers, 1 cylinder machine, 1 Yankee.

Draper Felts for Efficiency

DRAPER BROTHERS COMPANY

Woolen Manufacturers Since 1856

Canton, Massachusetts

RALPH E. BRIGGS Sales Manager

BRADFORD WEST, PITTSFIELD, MASS. • WILLIAM N. CONNOR Jr, CANTON, MASS. • L. H. BREYFOGLE, KALAMAZOO, MICH. • CHAS. E. BERTSCHY, MILWAUKEE, WIS. • W. I. CAMPBELL, SAVANNAH, GA. • BALFOUR GUTHRIE & CO. Ltd., PACIFIC COAST

ment in 1932, and manager of the foreign department of Brown Company and Brown Corporation in 1940.

From May, 1942, until July, 1943, Mr. Vayo served as chief of the Lend-Lease Division of the Allocation Office of the Forest Products Bureau of WPB and then rejoined the Brown Company in New York. In March, 1944, he was recalled to the WPB as a dollar-a-year man. More recently, he was WPB's chief of the Foreign Section of the Pulp and Paper Division, and deputy chief of Pulp Allocation.

◆

ED JAHN WILL STUDY THE PULP AND PAPER INDUSTRY IN NORTHERN EUROPE

Dr. Edwin C. Jahn, professor in the Pulp and Paper Department of the New York State College of Forestry at Syracuse University, has been granted sabbatical leave to accept an appointment with the Auxiliary Foreign Service of the Federal Department of State. He will undertake a special study of commercial and economic developments in the pulp and paper industry of the northern European countries.

This project was initiated by the Pulp and Paper Unit of the Bureau of Foreign and Domestic Commerce of the Department of Commerce, with the cooperation of the Department of State. It is the responsibility of the Department of Commerce to keep United States industry and business currently informed on international trade conditions.

W. LeRoy Neubrech, a graduate of the College of Forestry, is chief of the Commerce Department's Pulp and Paper Unit.

According to Professor Clarence E. Libby, head of the Department of Pulp and Paper Manufacture at the College, the assignment of Dr. Jahn to this project is significant to American pulp and paper businessmen and manufacturers so that they may have a thorough and accurate appraisal of the pulp and paper industry with respect to economic, statistical, financial and technical facts on the status of foreign industry. This helps American business men and manufacturers to gauge better their own needs and activities.

Dr. Jahn will be stationed in Stockholm and will cover the northern European countries, particularly Sweden, Norway and Finland. He is familiar with the area, having studied the chemical and paper industries there during the war, and he also held an American - Scandinavian Foundation Fellowship to Sweden some years earlier.

Leo F. McAteer

▶▶▶ Formerly assistant supervisor of the wage rate and planning department of the General Electric Company's plant at Pittsfield, Massachusetts, *Leo F. McAteer* has been appointed supervisor of the time study, standards and methods department at the Holyoke (Mass.) plant of Worthington Pump and Machinery Corporation.

◆

ARNOLD G. BROWN MADE MGR. OF PUMP DIVISION OF FAIRBANKS MORSE

A change in the management of the Pump Division has been announced by Fairbanks, Morse & Company, Chicago. Arnold G. Brown, formerly assistant manager, is advanced to the position of manager. He succeeds John S. King, who has been transferred to be acting manager of the Railroad Division.

Arnold G. Brown

Mr. Brown was general sales manager of the Pomona Pump Company, when it was purchased a year ago by Fairbanks, Morse & Company. Soon afterwards he was made assistant manager of the Pump Division. Mr. Brown is a graduate engineer of the Syracuse University, and traveled extensively as an engineer until he became associated with the Pomona Pump Company.

◆

▶▶▶ From H. Waterbury & Sons Company, Orisany, New York, comes the announcement that *Lester J. Robinson*, formerly connected with Lockport Felt Company, is now associated with the Waterbury company.

◆

RETIREMENT OF ROLF THELEN ANNOUNCED BY FOREST PRODUCTS LAB.

The retirement of Rolf Thelen, chief of the United States Forest Products Laboratory in Madison for the past twenty-six years, has been announced. He is succeeded by Raymond C. Rietz, a staff member since 1928.

Prior to coming to Madison in 1909, Mr. Thelen did research work for the Forest Service successively at Seattle, Washington, the timber testing laboratory, at Purdue University, Lafayette, Indiana, and at Forest Service headquarters in Washington, D. C.

Upon his arrival in Madison, he supervised the installation and erection of apparatus and equipment with which the laboratory started operations the following year. For several years he had charge of the engineering section, but later devoted his full time to the design of new and special machinery and testing equipment. Just prior to the first world war he organized the laboratory's first commercial extension activities.

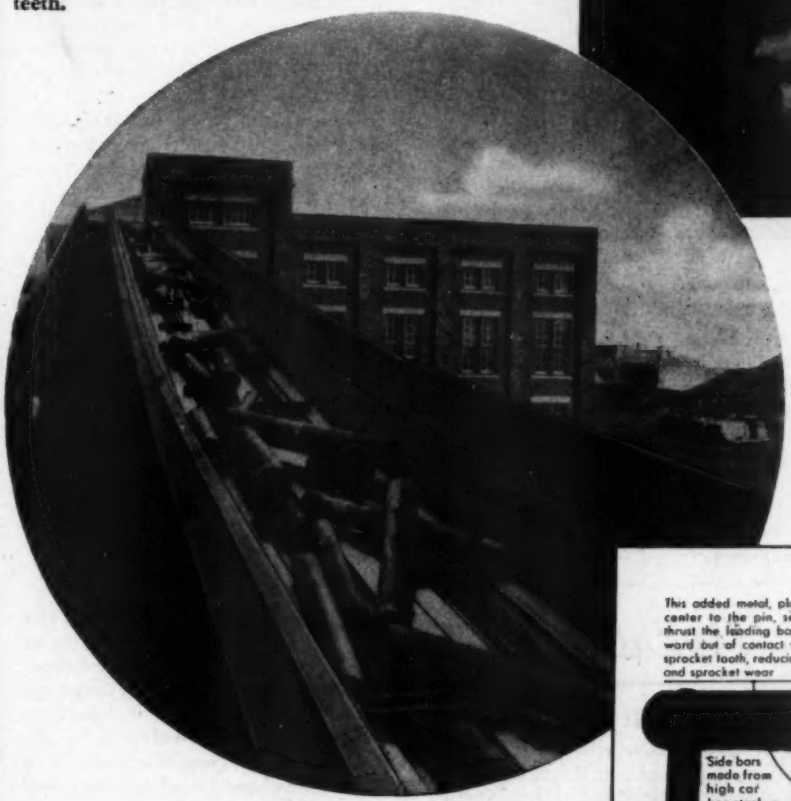
Just as he helped to plan and launch the first laboratory, he was intimately connected with the planning of the much larger laboratory building erected in 1932, serving as chairman of a committee in charge of its design.

For several years he has assumed responsibility for much administrative work of the laboratory under director Carlile P. Winslow, acting for the director during his absence and advising on general research programs.

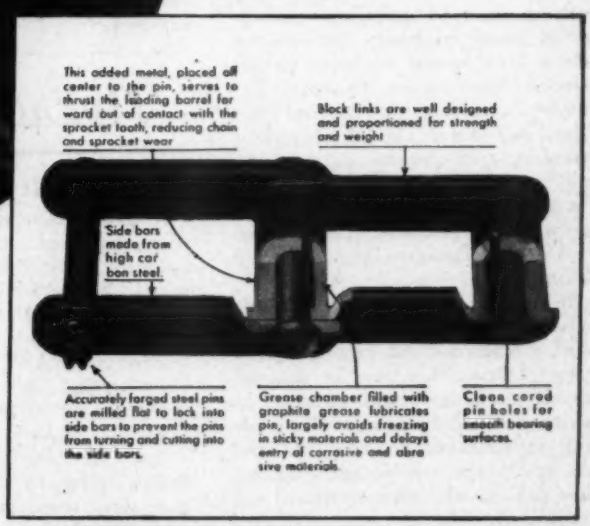
During World War I, Mr. Thelen acted as liaison officer for the laboratory in Washington, D. C., and in this work he advised many government agencies on the most efficient means of using wood products for war purposes. He returned to Madison in the spring of 1919 where he undertook a special assignment to supervise the

THIS CHAIN STOPS TEETH FROM *GRINDING!*

① YOU GET LONGER LIFE . . . more efficient service on transfer and pulpwood conveyors . . . with Rex Durobar chain. For only Durobar has the famous eccentric barrel construction that eliminates grinding between leading barrels of the block link and sprocket teeth.



② DUROBAR is noted for its durability. On pulp log conveyors, such as this, it takes a terrific pounding, but it's more than equal to the task. Block links are made in malleable iron and connecting side bars are blanked from high carbon steel. Where even greater strength and resistance to abrasion are needed, Durobar block links are furnished in Z-Metal, the ferrous metal that is 25% stronger than standard malleable iron.


This added metal, placed off center to the pin, serves to thrust the leading barrel forward out of contact with the sprocket tooth, reducing chain and sprocket wear
Block links are well designed and proportioned for strength and weight
Side bars made from high carbon steel
Accurately forged steel pins are milled flat to lock into side bars to prevent the pins from turning and cutting into the side bars.
Grease chamber filled with graphite grease lubricates pin, largely avoids freezing in sticky materials and delays entry of corrosive and abrasive materials.
Clean cored pin holes for smooth bearing surfaces.

③ THIS CROSS SECTION shows where Durobar gets that extra strength. Notice how the barrels are reinforced on the block links. This eccentric construction keeps the leading barrel of the block link out of contact with the sprocket tooth and eliminates grinding action between them as the chain flexes over the sprocket. This exclusive construction assures longer life for both chain and sprocket.

Rex Durobar chain belts, in malleable or Z-Metal, are the answer to many pulp handling problems involving heavy loads and severe service. The Rex Man will gladly help with your chain belt application problems. For engineering information, write for your copy of the 768 page catalog No. 444. Address Chain Belt Company, 1714 West Bruce Street, Milwaukee 4, Wisconsin.

REX **CHAIN BELTS**

Manufactured in every available type for the positive transmission of power, timing of operations and conveying of materials.

CHAIN BELT COMPANY OF MILWAUKEE

Rex Chain Belt and Transmission Division, Rex Conveyor and Process Equipment Division, Milwaukee 4, Wisconsin • Baldwin-Duckworth Division, Springfield 2, Massachusetts

preparation and publication of all the results the laboratory had secured during the war.

After this, Mr. Thelen began his studies of timber physics, primarily as related to the seasoning of wood, that later led to his invention of various types of forced-circulation dry kilns.

In Mr. Thelen's collaboration with Arthur Koehler of the laboratory staff, the *Kiln Drying Handbook*, a textbook on "Kiln Drying of Lumber," was written; and he has written numerous reports and articles dealing with many subjects of wood utilization, including uses of wood wastes.

Mr. Thelen's retirement plans are still in the formative stage but he intends to do considerable traveling and to undertake some studying in the fields of mathematics and economics.

◆

DOWNINGTOWN APPOINTS "ED" STREET A VICE PRES.

E. T. Street, who has been associated with the Downingtown Mfg. Company, Downingtown (Pa.), for sixteen years, was recently appointed vice president in charge of sales, succeeding the late Jacob Edge. Prior to this, "Ed," as he is well known by his many friends in the paper industry, was in charge of engineering. In this capacity, his work was the design and development of new equipment and assisting the sales department in the sale of special machinery. Noteworthy among these special machines, he developed Downingtown Wallboard Machinery, projected by the late Mr. Edge, and today this equipment is operating from Sweden to Australia and from Minnesota to Florida. At the present time, the company is building wallboard machines to be installed in Australia, Louisiana, Minnesota and Washington.

Before his association with Downingtown, Ed Street was for ten years chief engineer for the Ruberoid Company. During that time, he designed special machinery, built additions to various mills, designed and built a felt mill in England; and designed and started up the first asphalt oxidizing unit in England. He investigated and studied the asbestos cement industry in Europe, and designed the first pilot plant of this type for the Ruberoid Company in the States. His work necessitated five trips to Europe and took him as far East as Budapest.

Prior to his association with the Ruberoid Company, Mr. Street for two years was superintendent of power for the Minnesota and Ontario Paper Company, International Falls, Minnesota. There he had complete charge of and responsibility for the generation and distribution of approximately 50,000 hp. This installation included water wheels direct-connected to grinders; water wheels connected to electrical generators; two boiler houses,

E. T. Street

one in Canada and the other in the United States; steam turbines; Corliss Engines driving paper machines; Ball angle compound engines; Lenz Poppet Valve Engines which he installed; also the largest sizes of H. R. T. Boilers, Eire City Boilers and B & W Horizontal Water Tube Boilers which he installed with special furnaces of his own design for burning both coal and hog fuel.

CLYDE FAULKENDER NEW RES. TECHNICAL DIRECTOR AT HOBERG

The new research and technical director of Hoberg Paper Mills, Green Bay, Wisconsin, is Clyde Faulkender. He fills the vacancy left by John P. Weidner, who resigned recently (Cf. P. I. and P. W., Jan., 1945).

Mr. Faulkender has a valuable background in papermaking, and is a specialist in semichemical pulping. The last position held by Mr. Faulkender was with Bauer Bros. Company, of Springfield, Ohio. While with that company, he supervised the installation of the Bauer pulping apparatus on the No. 4 and 5 machines at Hoberg's Division A.

He graduated from Iowa State College with a B.S. degree in chemical engineering. During his college training, he engaged in part-time research in pulp and papermaking with the U. S. Department of Agriculture By-Products Laboratory. After graduation, he was with the Dow Chemical Company for a year before going with Bauer Bros. Company.

◆

▶▶▶ Promotions in the wood department, recently made by the Brown Company, Berlin, New Hampshire, are: General assistant, *Perley W. Churchill;* resident manager, *H. Soderston.* Mr. Churchill formerly was resident manager.

Necrology

ROBERT STALKER

Robert Stalker, who retired several years ago from the Chemical Paper Company, Holyoke, Massachusetts, passed away September 23 at his home in Holyoke. He was 86 years of age.

Mr. Stalker also had been superintendent of the AWP Wauregan mill in Holyoke, and for nine years he was superintendent of the Elkhart Paper Company, Elkhart, Indiana.

Born in Aberdeen, Scotland, Mr. Stalker came to this country more than sixty years ago. He was the last of five brothers, all of whom had been identified with the papermaking industry in Holyoke.

A son and a daughter survive.

◆

▶▶▶ Assistant treasurer and purchasing agent of the Valley Paper Company, Holyoke, Massachusetts, *Victor A. Hanson,* passed away recently at the age of 59. He is survived by his widow.

▶▶▶ *William Titcomb Dole,* vice president, treasurer, and member of the board of directors of the Champion International Paper Company, passed away at his home in Lawrence, Massachusetts, September 27, at the age of 69. Mr. Dole was a native of Somerville (Mass.), and had been associated with the company for forty-six years. He is survived by his widow, one daughter and two grandchildren.

◆

▶▶▶ The passing of *Wayland H. Evans,* president and founder of Evans Associates, Inc., advertising agency in Chicago, occurred suddenly on September 29.

◆

ROBERT M. THOMPSON

Chief engineer of the American Writing Paper Corporation, Holyoke, Massachusetts, Robert Morse Thompson passed away October 4.

Mr. Thompson was a native of Lawrence, Massachusetts. He had lived in Holyoke for fifty years and had been connected with AWP for forty years.

He is survived by his widow, a son and two daughters.

for Wyandotte

— SECOND DE LAVAL TURBO-ALTERNATOR INSTALLED FOR MODERN MUNICIPAL STATION

Power for the City of Wyandotte, Mich., is generated in part by two DE LAVAL turbo-alternators . . . a 6000 kw. and a 4000 kw. unit; the older unit having been installed in 1940 and the newer unit in 1943. The excellent performance of the first De Laval unit influenced the purchase of the second. • Both units are so arranged that oil pumps and oil lines are isolated from high temperature steam to eliminate fire hazards. • The De Laval Steam Turbine Company is one of the oldest builders of steam turbines and their experienced engineers are prepared to discuss your requirements without obligation.

3529

TURBINES • HELICAL GEARS • WORM GEAR SPEED REDUCERS CENTRIFUGAL PUMPS • CENTRIFUGAL BLOWERS and COMPRESSORS • IMO OIL PUMPS

DE LAVAL

STEAM TURBINE COMPANY · TRENTON 2, NEW JERSEY

SALES OFFICES: ATLANTA • BOSTON • CHARLOTTE • CHICAGO • CLEVELAND • DENVER DETROIT • DULUTH • EDMONTON • GREAT FALLS • HAVANA • HELENA • HOUSTON KANSAS CITY • LOS ANGELES • MONTREAL NEW ORLEANS • NEW YORK • PHILADELPHIA PITTSBURGH • ROCHESTER • ST. PAUL • SALT LAKE CITY • SAN FRANCISCO • SEATTLE TORONTO • TULSA • VANCOUVER • WASHINGTON, D. C. • WINNIPEG

RECONDITIONED . . .
FOR FAST ROLLING!

You wouldn't want to depend on the loaded felt shown at the left to get production speed from your machines. But you can see that the reconditioned felt is ready to do about as good a job as when it was new!

Magnus Felt Reconditioners

are designed not only to clean a felt, but to put it in condition to do what it did when new . . . with its softness restored and its nap full.

There is a Magnus Felt Reconditioner to suit your problems of loading and operation . . . from Magnus Feltex, for ordinary machine felts with the usual type of loading, to Magnus D-Scale-R, for putting badly limed felts back into top-notch condition. There are types for conditioning felts on the machine and off, as well as those that help break in a new felt on the machine.

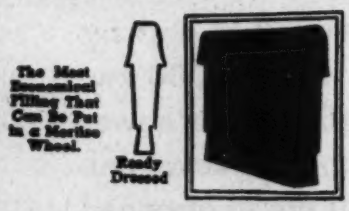
May we send samples for trial?

MAGNUS CHEMICAL CO., 192 SOUTH AVE., GARWOOD, N. J.

MAGNUS Paper Mill Cleaners

"READY DRESSED" MILL COGS

LABOR SAVING—TIME SAVING


The Most Economical Filling That Can Be Put In a Morrison Wheel.
Ready Dressed
Blank Head
We Make Any Style or Size Wanted.
Write for Instruction Sheet "O" Which Is Free.

QUICK SERVICE ON ALL SIZES

THE H. P. BOWSHER CO., South Bend, Ind.

HARDY S. FERGUSON & COMPANY

CONSULTING ENGINEERS

200 FIFTH AVENUE NEW YORK 10, N. Y.

Hardy S. Ferguson—Member *A.S.C.E. A.S.M.E. E.I.C.*

Moses H. Tecse—Member *A.S.C.E. A.S.M.E. E.I.C.*

Consultation, reports, valuations, and complete designs and engineering supervision for the construction and equipment of

- PULP AND PAPER MILLS AND OTHER INDUSTRIAL PLANTS
- STEAM AND HYDRO-ELECTRIC POWER PLANTS
- DAMS AND OTHER HYDRAULIC STRUCTURES

for DEPENDABLE HANDLING OF LIQUIDS *in* PAPER MILLS

investigate

BLACKMER ROTARY PUMPS

SELF-ADJUSTING FOR WEAR

When the "buckets" (swinging vanes) finally wear out a 20-minute replacement job restores the pump to normal capacity. Twenty years of service is not unusual.

Write for Bulletin No. 307—Facts About Rotary Pumps.

Capacities to 750 G.P.M. Pressures to 500 psi.

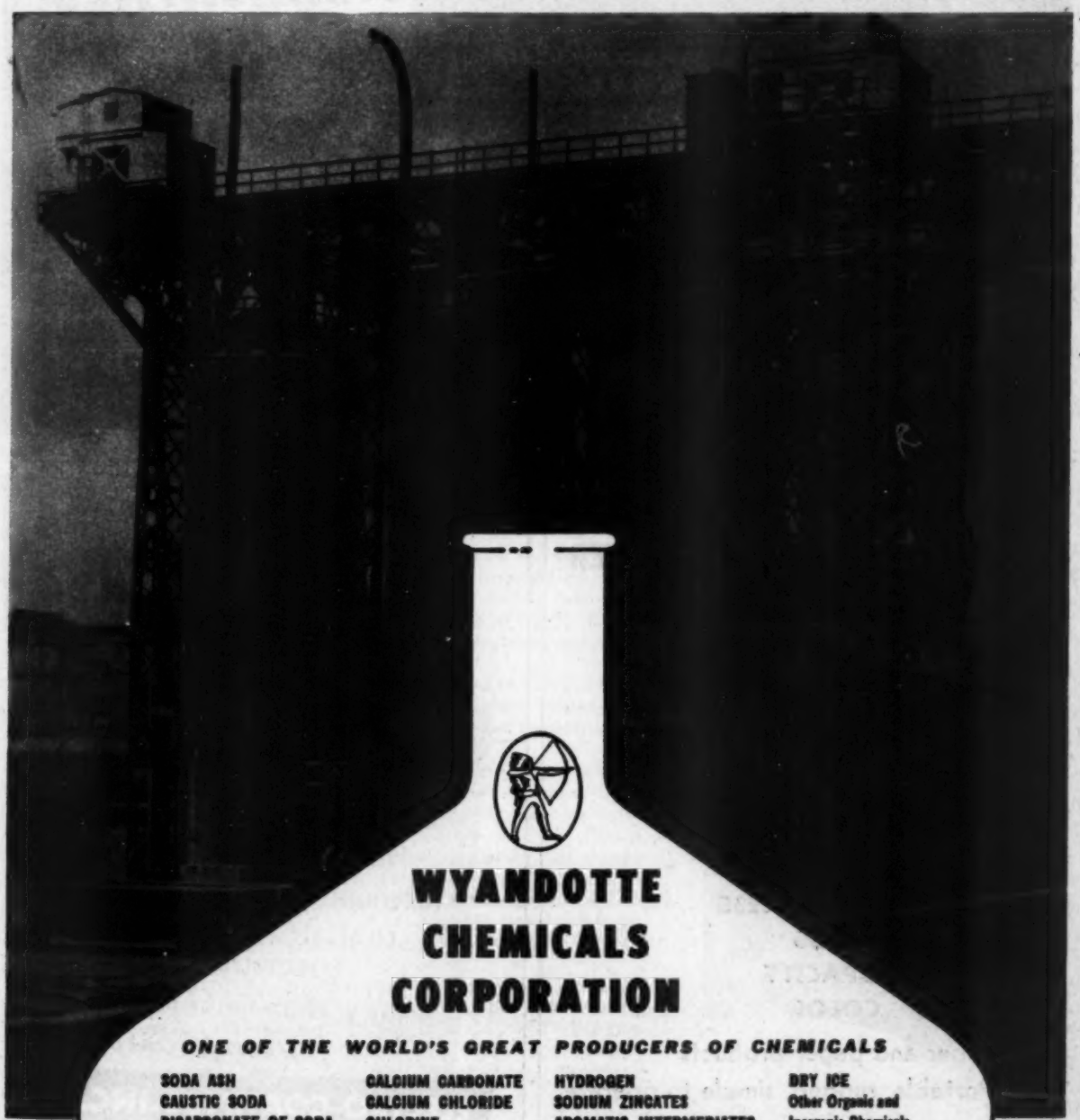
BLACKMER PUMP COMPANY

2130 CENTURY AVENUE GRAND RAPIDS 9, MICHIGAN

POWER PUMPS • HAND PUMPS • EZY-KLEEN STRAINERS

LIMESTONE INTO CHEMICALS

These 135-foot kilns of the Wyandotte Chemicals Corporation at Wyandotte, Michigan, handle many hundreds of tons of limestone every day. From the grey-white rock rich in calcium carbonate come soda ash and other basic materials which are the sources of the long list of Wyandotte chemicals.



WYANDOTTE CHEMICALS CORPORATION

ONE OF THE WORLD'S GREAT PRODUCERS OF CHEMICALS

SODA ASH	CALCIUM CARBONATE	HYDROGEN	DRY ICE
CAUSTIC SODA	CALCIUM CHLORIDE	SODIUM ZINCATES	Other Organic and
BICARBONATE OF SODA	CHLORINE	AROMATIC INTERMEDIATES	Inorganic Chemicals

WYANDOTTE CHEMICALS CORPORATION • Michigan Alkali Division • Wyandotte, Mich.

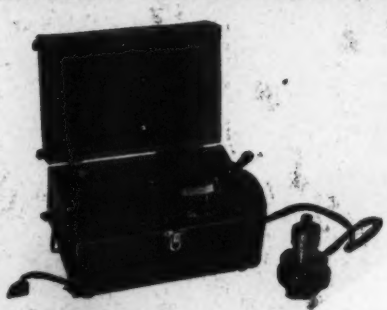
In a mill producing facial or other tissues calling for gentle handling of the web, which winders or rewinders give the best service?

CAMACHINES OF COURSE !!!

CAMERON MACHINE COMPANY 61 POPLAR ST., BROOKLYN 2, N. Y.

MIDWEST OFFICE: 111 W. MONROE ST., CHICAGO 3, ILL.

PHOTOVOLT
Photoelectric REFLECTION METER



For accurate measurement of

BRIGHTNESS
GLOSS
OPACITY
COLOR

of paper and paper products

Portable, rugged, simple to operate

Write for literature

PHOTOVOLT CORP.

95 Madison Ave. New York 16, N. Y.

Employ our EXPERT
CHROMIUM PLATING
Service

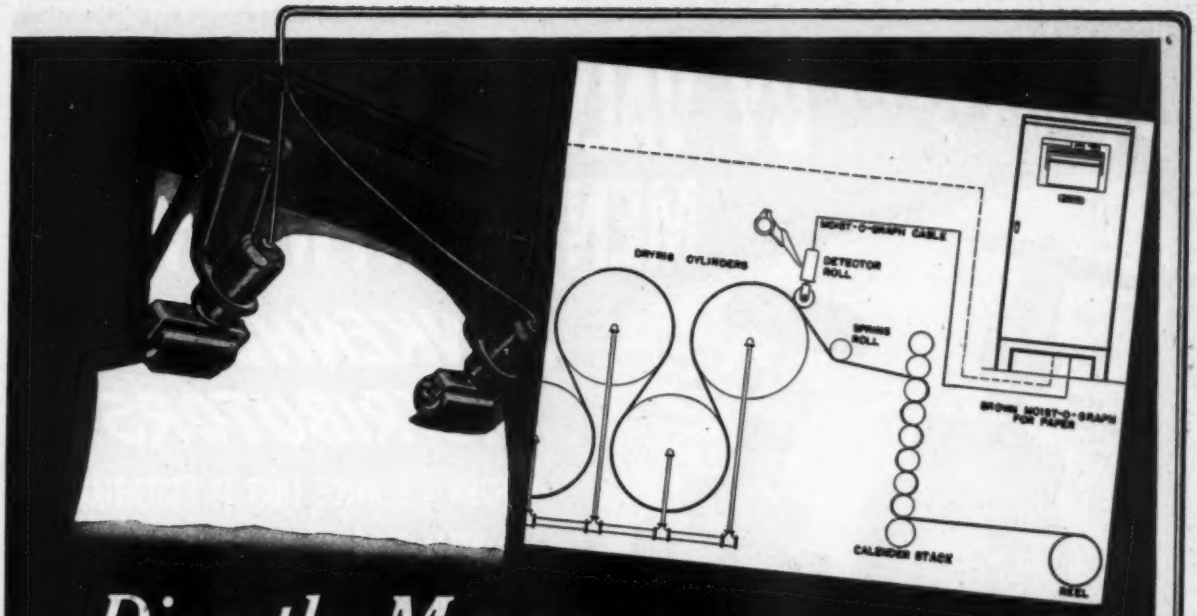
TO MAKE YOUR ROLLS AND SCREEN PLATES

last many times longer and deliver uniformly high quality production—

CONVENIENT LOCATIONS
COMPLETE FACILITIES
EXPERIENCED PERSONNEL

WRITE, WIRE OR PHONE FOR *Prompt Service*

ELECTRO-COATINGS, INC.
2380 BLUE ISLAND AVENUE
CHICAGO 8, ILL.
PLANTS AT CHICAGO · MOLINE · MILWAUKEE



Directly Measures MOISTURE CONTENT *of Moving Sheet*

Here's the instrument the paper industry has long awaited—it outmodes all other methods of checking *"moisture content"* for all grades and weights of paper.

The Brown *Moist-o-Graph* system operates on the principle that *"moisture content"* of paper has a corresponding electrical resistance. As the sheet passes over the drying cylinders—the *Moist-o-Graph* electronic detector roll is in DIRECT CONTACT with the moving sheet continuously measuring moisture content.

This measurement is electrically transmitted to the *Moist-o-Graph* recorder, which provides operators with a visual and permanent record of *moisture content* of the paper as it comes off the machine.

The Brown *Moist-o-Graph* is an accurate guide for regulating heat supply to drying cylinders—permits maximum amount of water to be held without discoloring or spoilage. Eliminates overdrying—increases production—lowers steam costs. Insures uniform quality weight and caliper of stock.

Years of research, design and tests have proven the Brown *Moisto-o-Graph* the ideal instrument for determining and holding the correct moisture content of Book, Bond, Ledger, Coated, News, Cardboard, Box Board, Capacitor Tissue, and Kraft papers.

Learn more about the Brown *Moist-o-Graph* system. Write for Bulletin 28-8, THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4489 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Toronto, Canada; London, England; Stockholm, Sweden; Amsterdam, Holland.

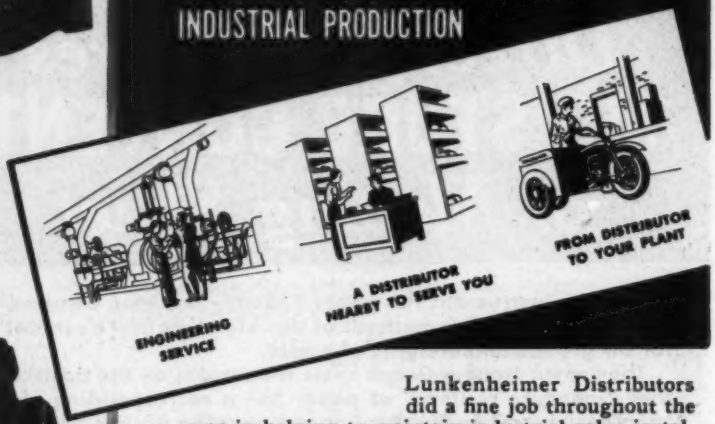
BROWN MOIST-O-GRAPH

Relied upon BY VALVE MAINTENANCE MEN EVERYWHERE . . .

LUNKENHEIMER DISTRIBUTORS

RENDER A SERVICE THAT IS ESSENTIAL —A VITAL LINK IN THE CHAIN OF INDUSTRIAL PRODUCTION

Fig. 1938 Steel Gate
Fig. 123 "N-M-D" Globe (Non-Metallic Disc)
Fig. 1430 Iron Body Gate
Fig. 2125 Bronze Gate
Fig. 16 "Renewo" Globe
Fig. 1640 "King Clip" Gate



Lunkenheimer Distributors did a fine job throughout the war in helping to maintain industrial valve installations at top efficiency.

Located in leading industrial centers, our Distributors have provided quick, readily accessible, and complete valve service throughout the nation.

In addition to supplying high quality, long life Lunkenheimer Valves, they have assisted maintenance men in the solution of both operating and maintenance problems.

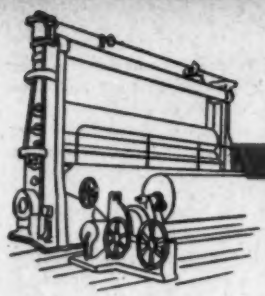
This service is nothing new . . . Lunkenheimer Distributors have been rendering it for many years in the past, and will continue doing so in the future. For this Distributor set-up is a basic, permanent part of the Lunkenheimer way—the *better service* way.

You can depend on your nearby Lunkenheimer Distributor for expert, experienced aid in the solution of valve maintenance and operating problems. Call on him!

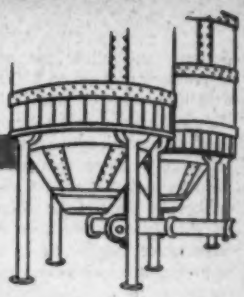
The Lunkenheimer Co., Cincinnati 14, Ohio, (Offices: New York 13, Chicago 6, Boston 10, Philadelphia 7. Export Department: 318-322 Hudson St., New York 13, N. Y.)

LUNKENHEIMER VALVES

BRONZE, IRON, STEEL AND CORROSION RESISTANT ALLOY VALVES, 125 TO 2500 LB. S. P.; BOILER MOUNTINGS, LUBRICATING DEVICES, AIRCRAFT FITTINGS



Practical SHORTS



Readers are invited to submit short, practical articles for this department. The items should be original and should relate to ways and means of handling production and maintenance jobs. Where possible, articles should be illustrated. Rough sketches only are required. Payment will be made for acceptable items upon publication.

How May the Direction of Rotation of a Motor Be Changed?

In direct-current motors, this may be accomplished by transposing the connections to either the field or the armature, but not to both. The manufacturer of the motor usually supplies diagrams showing how to change connections in order to reverse direction of rotation, and in most cases, all the leads are brought outside of the motor so that no internal connections need be disturbed. It should be noted that reversal of the line terminals has no effect on the direction of rotation of a direct-current motor.

Reversing an alternating-current motor is very simple. In a two-phase machine, the connections to one phase should be interchanged. In a three-phase motor, it is only necessary to interchange two of the leads.

Direction of rotation in a single-phase, repulsion-start, induction motor is changed by shifting the brushes according to marks that the manufacturer has made on the motor frame or brush holder. In other types the instructions issued by the manufacturer should be followed. It should be noted that reversal of the line terminals does not affect the direction of rotation of a single-phase motor. It is only in polyphase motors that this does effect a change.—*Catechism of Electrical Machinery*, FAIRBANKS, MORSE & CO.

◆

Respiratory Protection from Solvent Vapors

Respirators provide valuable aid in protecting workers from organic solvent vapors. They are especially useful for:

1. Small solvent operations, where mechanical ventilation is not practical, as in some types of spot cleaning.

2. Occasional operations involving large amounts of solvent vapors, such as tank cleaning.

3. Additional protection where mechanical ventilation is provided, as in spray painting.

Where the vapor concentration is not above 2 per cent, a gas mask which filters the contaminant out chemically may be used. This type of respirator consists of a mask connected by means of a short length of tubing to a canister, strapped on the chest or back. The canister contains a chemical which removes the solvent vapor from the air as it is inhaled.

Since different air impurities require different chemicals, the canister should be clearly marked to indicate whether it is suitable for organic solvent vapors. Its contents will gradually become exhausted, so it should be discarded as soon as the odor of solvent becomes noticeable to the wearer. Where possible, canisters should be marked as to permissible length of service and a record kept of the time each one has been in active use, so that it may be discarded when its limit of service has been reached. If there is any doubt the amount of use a canister has had, it should be replaced.

Some gas masks are equipped with a chemical cartridge, rather than with a canister. These can be used for only slightly contaminated air. Their life span is short, and they are not approved for regular use.

If the air is deficient in oxygen or contains a high vapor concentration, as in solvent tanks, filtering is inadequate, and an independent source of air must be provided. This is done with a "supplied air" respirator, which supplies air from an uncontaminated area to the wearer of the respirator by means of a long, flexible hose. If the hose is longer than 25 feet, the air must be blown in by means of a manually operated blower. In addition, the wearer of the respirator should be protected by a life line and a watcher, strong enough to lift out the man in the tank, stationed outside the danger zone.

Where there is a source of compressed air in the plant, it may be used to feed air to the wearer of the respirator. In this case, the respirator used is equipped with a narrow-diameter high-pressure tube instead of the hose and is known as the "air line" type. Since air cannot be breathed naturally through the small hose, air line respirators should not be used where the atmosphere is so toxic that it would be dangerous to remove the mask for a few minutes in case of failure of the compressed air supply. Under such circumstances, the supplied air respirator with large-diameter hose or self-contained oxygen breathing apparatus must be used.

All respirators should be of types approved for the specific conditions of use by the U. S. Bureau of Mines.

Masks should be carefully adjusted and tested for leaks before operations begin. Constant education and supervision are necessary, to prevent workers from carelessly lifting or discarding respirators.

Caution should be observed by those depending upon respirator protection. A respirator may protect the individual operating the solvent process, but the vapors can spread and endanger the workers in nearby areas. Even with respirators, workers should not be exposed to highly contaminated atmospheres because of the danger of skin difficulties and also, with certain solvents, of fire. As a general rule, therefore, respirators should not be used as a substitute for good ventilating procedure.

Respirators require care. In some cases, individual workers are given their own respirators, for which they are responsible. Generally, it is preferable to put one man in charge of all respirators and have them turned in to him at the end of the day, cleaned, inspected, stored and distributed by him when required.—SAFETY RESEARCH INSTITUTE, INC.

◆

Non-Metallic Gasket Materials

White Fiber Asbestos (Chrysotile)

The common white asbestos is a mineral consisting essentially of a magnesium silicate combined with approximately 14 per cent water of crystallization. In the pure form, asbestos, fibers have little strength, and for most gasket applications must be reinforced with either fine metal wire, if heat resistance is of prime importance, or with cotton for lower temperature service, where softness is a factor.

Asbestos will retain most of its inherent strength up to about 900 Fahr., or just below a dull red heat. The loss of strength above 900 Fahr. is due to a gradual driving off of the water of crystallization. As the temperature goes above 900 Fahr., the rate of loss of strength increases rapidly, becoming almost instantaneous at 1300 Fahr. Asbestos from which the water of crystallization has been driven by heating above 900 Fahr. may be reduced to a powder by merely rubbing the fibers between the fingers.

In the fabrication of gaskets, asbestos is used in two relatively pure forms, woven and as millboard or paper. In the woven form, the asbestos is generally reinforced with both brass wire and cotton, and since the heat resistance is limited by the cotton content, plain woven asbestos gaskets are seldom used at temperatures above 300-400 Fahr., particularly if there is any considerable pressure to be held. Furthermore, since woven asbestos is very porous, gaskets of this type are usually impregnated with rubber or plastic compounds. Impregnation does not improve the heat resistance, as most of the compounds used are organic in nature and will themselves change in characteristics in the 200-400 Fahr. range.

Asbestos millboard and paper are usually made up of relatively pure asbestos fibers bound with starch or sulphites. In gasket manufacture, millboard and paper are used as soft fillers for metal jacketed

designs, and allow use of these gaskets to temperatures up to 850 Fahr.

White asbestos has little resistance to the action of strong acids. It may be used with weak acids and with most alkali solutions. Since this asbestos is seldom used as a gasket unless impregnated with rubber or plastic, the corrosion resistance of the asbestos itself is not of primary importance, depending as it does upon the impregnant to withstand the action of the corrosive.

Blue Fiber Asbestos (Crocidolite)

This material is widely used in the woven cloth form as an acid resistant gasket for low pressures and relatively low temperatures.

The temperature limit for blue asbestos is somewhat lower than for the white variety, and it is seldom used above 500 Fahr., unless reinforced or as an inlay in corrugated metal gaskets.

Rubber Sheeting from Natural Base Rubber

There are available numerous forms of rubber sheet material for gasketing purposes. These forms vary in their rubber content, and in the nature of their compounding. They have the general corrosion resistance of natural rubber compounds to the action of various chemicals, but are readily attacked by oils and petroleum solvents.

Rubber compounds will harden and become brittle by prolonged exposure to heat and are not to be recommended for gasket service at temperatures much above that of boiling water.

Synthetic Rubbers and Plastics

There are available gasket sheet materials compounded from innumerable synthetic rubber and plastic bases. Depending upon the base and compounding used, a material suitable for almost every corrosive service may be had. These sheet materials are in most instances limited to low temperature service and only a few may be used above 250 Fahr., which appears to be the useful limit. The recently developed "Silicone" compounds are said to be useful as high as 575 Fahr., but because of their scarcity, their current application has been limited to certain restricted fields.

Vegetable Fiber Sheet

Vegetable fiber sheet is essentially an impregnated paper that has been treated to render it resistant to water and petroleum solvents. Its usefulness is limited to low temperature service below 250 Fahr.

Asbestos Composition Sheet

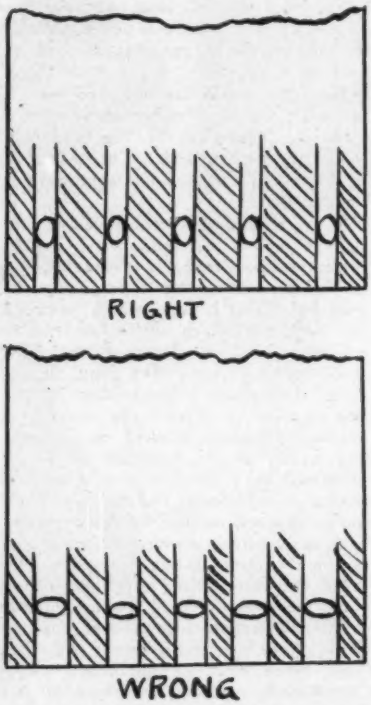
This most widely used gasket sheet material is actually a rubber compound with a high percentage of asbestos fiber as a filler. The resistance of these asbestos composition sheets to corrosive agents and to temperature are determined by the nature of the rubber compound. For most services, a natural or reclaimed rubber base is used; for all and certain chemical service, special bases must be specified.

For continuous service, asbestos composition sheet is used at temperatures up to 850 Fahr. Rubber base materials used at high temperatures become very hard and brittle and they cannot be re-used. However, relatively little sheet packing is employed at high temperatures and its greatest field is in cold water, air and low pressure steam services.—GOETZE GASKET & PACKING CO., INC.

◆

How to Punch Belt Lacing Holes

The accompanying sketches show the wrong and the right way to punch holes in a belt preparatory to lacing. Oblong (elliptical) holes are preferable to round holes, but they must be punched in such a way that the "long" axis of each hole lies parallel with the belt. In this way the more useful belt is left to do the work as indicated by the shaded areas in the



sketches. There is considerably more shaded area where the method is right than where it is wrong.

The efficiency of a belt joint is computed in the same way that the efficiency of a boiler joint (riveted) is computed. In both cases it is best to cut away as little of the stressed material as possible. That is, make the area of the stressed section shown in the sketches as great as possible.—W. F. SCHAPHORST.

◆

Heat Exchanger Installation Pointers

The successful operation of a heat exchanger definitely depends upon correct installation, and consequently great care is to be exercised. Obviously, location of the unit is the initial consideration when installing, and the following should be observed:

(a) Allow a space equivalent to the tube bundle length for cleaning and bundle removal.

(b) Allow a space of three to four feet at the floating head end for convenient removal of shell cover and floating head on units of this design.

Foundations should be sufficiently heavy to allow permanent support without settling, and to absorb any normal vibration from outside causes. The unit should, of course, be leveled and squared to preclude the necessity of forcing pipe connections into place and the possibility of leaks at such connections during operation. If the supports are integral, the foundation bolts at the end opposing the channel should be loosened to allow free expansion and contraction of the shell.

To insure the full rated capacity of unit, it is important to select the proper pipe sizes. While pipe connections for average conditions are specified on certified drawings, further thought must be given plant conditions, such as length of pipes, fittings and other obstructions, and the allowable pressure drop through the heat exchanger.

The following suggestions regarding this subject should be borne in mind:

1. Keep out foreign materials—Pieces of gaskets, metal chips, scale and similar materials, originating during installation, may plug tubes, hence:

(a) Care should be used in placing gaskets.

(b) Valves with soft seats should not be used.

(c) Pipe lines should be blown out before connecting to the unit.

2. Safety Devices—Safe operation with a minimum of attention can be effected by following these rules:

(a) To safeguard against failures or possible ruptures during service, the unit must be protected with safety or relief valves of an approved type and make, set at the proper pressure. In the tube circuit, such devices should be placed in the inlet piping, between the nearest valve and the unit.

(b) Provide a by-pass in both circuits of the unit to permit periodic inspection or repair, without interrupting fluid flow.

(c) In condensing units, inert gas vents should be provided to preclude gas binding of the heat transfer surface, with a subsequent reduction in thermal capacity.

(d) Provide suitable drain piping.

(e) Install surge drums when the liquid is being delivered to the unit by a reciprocating pump, as the vibration is apt to result in serious damage to the tubes.

(f) Install gage glasses in condensing units to show liquid level.—THE WHITLOCK MFG. CO.

◆

Sponge Rubber Table or Bench Top

A thin slab of sponge rubber as a covering for a bench or table top has been found to reduce fumbling in the picking up of small metal parts therefrom. Different sponge thicknesses and densities may be required for some jobs; but a slab as thin as 1/8 inch has been effective in one large industrial plant.—THE B. F. GOODRICH COMPANY.

3 Advantages YOUR FOURDRINIER SAVE-ALL TRAYS CAN HAVE

This installation of Monel trays has served more than 4 years . . . yet has required no maintenance. Many Monel save-all trays are still in use after 15 years.

You obtain three important benefits . . . from *modern* Fourdrinier save-all trays.

(1) When trays stay smooth and free of corrosion by white waters and by cleaning acids such as dilute sulfuric and hydrochloric (muriatic), the fibre moves along without heavy accumulations or lump formations. Fibre recovery by the save-all filter is improved.

(2) Smooth trays . . . with surfaces free of corrosion products and pitting . . . make clean-up a speedy, easy job. No laborious acid cleaning or brushing is required.

(3) When trays have both rigidity and high strength, they can be of relatively lightweight welded construction. Yet they'll take plenty of abuse . . . and maintenance costs will be negligible.

Save-all trays that combine all three advantages are made of MONEL. Your own machine builder has designed and constructed many such trays. Call on him for the replacements you need.

When you have a problem involving metals or corrosion . . . or when you want information on fabrication and welding . . . our Technical Staff will be glad to assist you. Write them.

THE INTERNATIONAL NICKEL COMPANY, INC., 67 Wall Street, New York 5, N. Y.

MONEL

NICKEL (INCo) ALLOYS

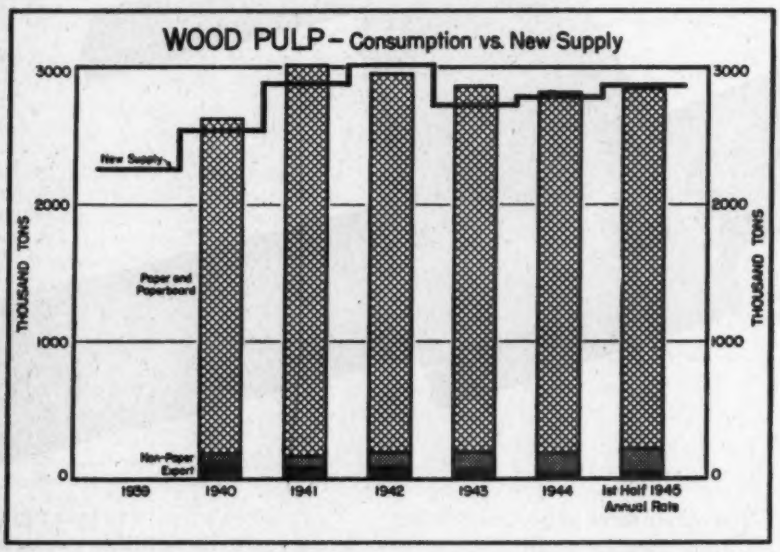
MONEL • "K" MONEL • "S" MONEL • "R" MONEL • "KR" MONEL • INCONEL • "Z" NICKEL • NICKEL

Sheet . . . Strip . . . Rod . . . Tubing . . . Wire . . . Castings . . . Welding Rods (Gas & Electric)

Wartime Achievements of the Pulp and Paper Industry and the Reconversion Outlook*

▶▶▶ OUTBREAK of the war in Europe brought an unparalleled expansion in the United States pulp and paper industry. Newspaper, book, and magazine circulations increased. Demand soared for wrapping, bag and special industrial papers, multiwall shipping sacks, paperboard shipping and inner containers, and many other items. The rise was accelerated after Pearl Harbor, and paper, normally one of the cheapest and commonest of materials, eventually became one of the tightest.

Although the war caused wood pulp imports from Scandinavia to drop sharply, then dwindle to a trickle, and finally disappear, increased domestic production and importations from Canada raised total wood pulp supply from 9 million tons in 1939 to 12 million tons in 1942 (see chart). At the same time, paper and paperboard production rose from 13½ million tons to more than 17 million, with the aid of wastepaper collection drives which brought in 6 million tons annually in 1941 and 1942.



Because stocks were large and new wood pulp supply increased almost in proportion to consumption, the situation continued easy during this early period. However, the structure of the industry required that certain controls be introduced. Cessation of wood pulp imports from Scandinavia cut off many nonintegrated and semi-integrated paper and paperboard mills from their normal sources of supply. Increased imports from Canada and expanded domestic production did not increase the supply of market wood pulp enough to maintain these mills in operation. In addition, nitration pulp requirements of the military forces were absorbing increasing quantities of market pulp.

In January, 1942, OPM Order M-52 attempted to distribute the burden of nitration pulp requirements among the producers of sulphite wood pulp (the grade used in nitration) so that the customers of these producers would not be disproportionately affected. This was only a temporary measure. Order M-93, effective May 1, 1942, authorized WPB to direct wood pulp deliveries. Control was exercised on a month-to-month basis during the remainder of 1942. Fortunately, average inventories of mills dependent upon market supplies were sizable, and it was possible to maintain all such mills in operation by diverting deliveries from those with large inventories to those which lacked such a cushion. M-93 was supplemented by L-120, which conserved pulp by reducing the basic weights of many types of papers, and by M-241a, which limited the quantities of paper that converters could use in the manufacture of many items.

Developing Shortage

The situation took a sharp turn for the worse in 1943. The difficulty was primarily in the woods, where a growing labor shortage in both the U. S. and Canada resulted in a 10 per cent drop in wood supplies. This was reflected in wood pulp supply, which fell from more than 12 million tons in 1942 to less than 11 million in 1943. Pulp consumption was running ahead of new supply. The deficit came out of stocks, which declined to dangerous levels.

Additional difficulties were encountered on the consumption side. Increasing requirements for explosives and for rayon production had boosted wood pulp use for non-paper purposes from 262,000 tons in 1940 to 514,000 tons in 1943. Exports were reduced sharply, but they were still 140,000 tons greater than in 1939. Paper and paperboard mills cut their pulp consumption from 11,000,000 tons in 1942 to 10,600,000 tons in 1943. However, by using more wastepaper and other waste materials, producers stretched their pulp supply and were thus able to sustain paper and paperboard production at approximately the 1942 level.

It became plain, early in 1943, that freely offered market supplies, and inventories of mills dependent on such supplies, were no longer adequate to keep such mills in operation, especially since Lend-Lease requirements for unbleached kraft pulp had substantially increased.

The control was, therefore, broadened to require pulp producers to set aside a percentage of their output for direction by WPB. Up to 20 per cent of the unbleached kraft production of integrated mills was diverted for market purposes.

Further controls were introduced by the middle of the year, as the shortage of pulp extended to all grades. Beginning in August, 1943, mills dependent on market supplies were restricted as to the total quantities of pulp they could consume. Curbs were placed on consumption of paper by newspaper, book, and magazine publishers and commercial printers. Limitations were set on the production of grocery and variety bags. Conservation orders were introduced in the field of specialty and other papers. Producers were required by Order M-241 to reserve stated percentages of their production time and facilities to provide for needs of military and other government agencies. But even these measures were not adequate by the end of 1943 to meet the crisis which was rapidly developing.

Tighter Control

The period of tight control began late in 1943 and lasted through the first half of 1945. Up till then, controls had been exercised only on wood pulp deliveries and the total quantities that might be used. It was now necessary to extend control over end products for which pulp might be used. Accordingly, M-93 was amended, and a complete reorganization of WPB operating divisions was effected for a more efficient handling of the situation. Paper and Paperboard Division Requirements Committees were set up to prepare quarterly requirements programs and to submit their requirements to the new Pulp and Paper Production Committee (actually a wood pulp allocation committee.)

Not only were specific quantities of wood pulp allocated by formal program for paper and paperboard, rayon, nitration, plastics, exports, etc., but paper and paperboard mill authorizations to consume wood pulp were tied to specific quantities of the various grades to be manufactured. Minimum quantities of the various grades to be produced were stipulated. Authorization of wood pulp use for relatively less essential papers and paperboards was curtailed.

Consumption of printing papers by newspaper, book, and magazine publishers and commercial printers was curtailed by as much as 25 per cent. Containerboard was placed under separate allocation pro-

*A report to the War Production Board by J. A. Krug, October 9, 1945, WPB Document No. 334—pp. 86-90.

cedure to manufacturers of shipping cartons (M-290), and essential users of cartons were given special priority ratings (P-146) to assist them in procurement. (This was the sole wartime instance of the use of priority ratings in the paper and paperboard field.)

More Wastepaper Used

Meanwhile, drives were carried on to increase pulpwood production and wastepaper salvage, and negotiations were initiated with Canada to boost imports of pulpwood, wood pulp, and newsprint. Quantities of wood pulp which might be used by paper and paperboard mills were rigidly limited, but no ceiling was placed on the quantities of waste paper and other waste materials that might be used nor on total production. In consequence, the volume of waste materials used increased to 48 per cent in 1944, and production of paper and paperboard in 1944, with less pulp than in 1943, exceeded both programmed production goals and the 1943 output.

Although total paper and paperboard production was maintained throughout 1944 and the first half of 1945 at a level only slightly below that of the record-breaking year 1941, serious stresses and strains developed in certain fields. Perhaps the most serious was in containerboard. With containerboard production averaging a little more than a million tons a quarter, the military and WFA take of V-board (a high test containerboard used for the manufacture of containers for overseas shipment) increased from a quarterly average of 122,000 tons in 1943 to 355,000 tons in the second quarter of 1945. This sharply reduced the residual available for domestic fiber shipping containers and other uses and threatened to disrupt the economy.

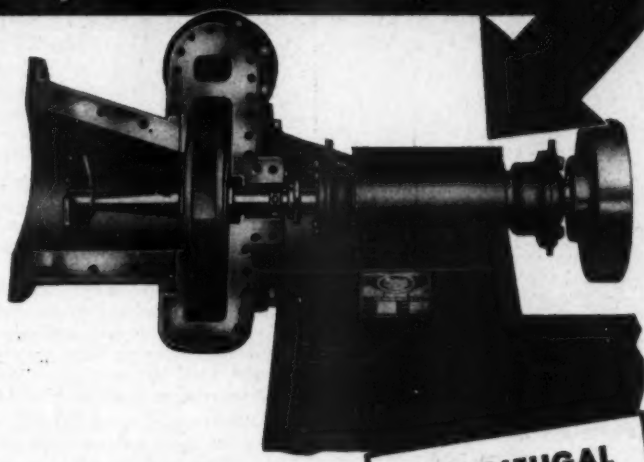
The effects of the strain on containerboard were indirectly reflected in a growing shortage of kraft wrapping paper and grocery and variety bag papers. Containerboard, multiwall shipping sacks, and waterproof papers required by the military were dipping heavily into the limited supplies of unbleached kraft pulp. Less and less of this could be allocated for wrapping and bag papers. By the second quarter of 1945, the program called for the production of kraft wrapping paper at only 53 per cent of the 1942 rate and bag papers at only 36 per cent.

Increased military and export requirements, together with the shortage of textiles, inadequate laundry service, and increasing industrial usage created a shortage in the sanitary paper field, especially facial and toilet tissue.

In the case of multiwall shipping sacks, in which large quantities of chemicals, fertilizers, potatoes, cement, etc., are packaged, the wartime expansion of production was unable to keep pace with requirements, and a concurrent shortage in textile bags aggravated the problem.

Added to these and other difficulties were the requirements of liberated areas, beginning in the first quarter of 1945. While the quantities involved were not large in relation to total supply, they did

5 IMPORTANT REASONS
for Selecting . . .



MORRIS CENTRIFUGAL STOCK PUMPS

1. **Less Dehydration**
2. **More Uniform Flow**
3. **Reduced Air-Entrainment Losses**
4. **Large Reserve of Excess Capacity**
5. **Output Closely Constant Under Varying Heads**

✓ Producing a steady flow, with no clogging or air binding, the Morris Type ST-P Stock Pump delivers more stock over a longer period at lower cost, and with fewer shut-downs and replacements. That's due to proved reliability of design, based on extensive experience in handling pulp of all kinds in various types of mills.

The suction opening is of unusually large diameter for the rated capacity. The suction nozzle is specially shaped and proportioned so that very heavy pulp can be drawn into the impeller without restricting the flow or creating extensive friction losses.

Notice the bottom of the suction nozzle. It is horizontal—flush with the eye of the impeller. No upward incline or step to encourage dehydration. Notice the bronze suction booster that mechanically agitates and propels the fibre into the suction eye, avoiding extraction of water and consequent clogging of the suction pipe with dehydrated stock. Notice the horizontal top discharge nozzle for more rapid expulsion of air, and the deep stuffing box that insures long packing life.

● Efficient on clean Sulphite or Kraft stock, as well as on waste paper or rag stock because of its non-clogging and non-binding characteristics. Write today for Bulletin 176.

MORRIS MACHINE WORKS
Builders of Centrifugal Pumps Since 1864
Baldwinsville, N. Y.
Branch Offices: Atlanta • Baltimore • Boston • Charlotte • Chicago
Cleveland • Detroit • Denver • Houston • Memphis • New Orleans
New York • Omaha • Philadelphia • Pittsburgh

MORRIS CENTRIFUGAL PUMPS

have the effect of reducing the residual supplies available for consumres.

It became apparent in the second quarter of 1945 that continuation of the two-front war would bring new and more drastic controls. Prisoners of war were being utilized to increase pulpwood and therefore wood pulp production. Wastepaper had been used to the fullest possible extent to augment scarce wood pulp supplies. Canada was producing and shipping to the U. S. all the pulpwood and wood pulp of which she was capable. Production of pulpwood, kraft pulp, containerboard, and fiber shipping containers had been placed on the National Production Urgency List. Despite all of these measures, inventories of both pulpwood and wood pulp were below the danger point. Military requirements for nitration pulp and V-board, already huge, were on the verge of further increases. Steps were being taken to convert two additional paper pulp mills to the production of nitration pulp, and Army ordnance plants, after long experimentation, had begun to dip into the precious kraft pulp as a nitration raw material.

Relaxation of Controls

Victory in Europe came in the nick of time. It brought an immediate and sizable reduction in nitration pulp requirements. More important, it promised the early resumption of wood pulp shipments from northern Europe.

The decline in nitration pulp requirements following V-E Day brought a noticeable easement in the white pulp situation by the end of the second quarter of 1945. In the third quarter, imports of wood pulp from Sweden began to arrive. By September 21, some 164,000 tons (a large part of it kraft) had already arrived from northern Europe.

With additional supplies in prospect, preparation of the third-quarter 1945 program had become considerably less difficult. Although wood pulp allocation was retained, the programming of paper and paperboard production was abandoned, with the exception of waterproof and shipping sack papers and containerboard.

Between V-E and V-J Days a number of the less important pulp and paper controls were revoked and others, notably the printing and publishing orders, were relaxed. Withholding of pulp from integrated mills was sharply reduced during the third quarter, and inventories in mills dependent on market supplies were increased in order to build up stocks to a 45-day level by the end of the quarter and thus permit revocation of M-93.

With the arrival of Swedish pulp, the pulp and paper industry's difficulties, born during the war, virtually vanished. All remaining controls with the exception of M-241, the reserve-production order and L-240, the newsprint consumption control order, were revoked by October 1, and it was certain that these would be short-lived.

Since the war did not require the physical conversion of the pulp and paper industry, reconversion poses no serious problems. Although the capacity of some paper mills to produce papers of special grades (condenser tissue, moisture vapor barrier materials, etc.) was expanded beyond probable peacetime requirements for these grades, this capacity represents only a small portion of the industry's output.

Increase Postwar Market

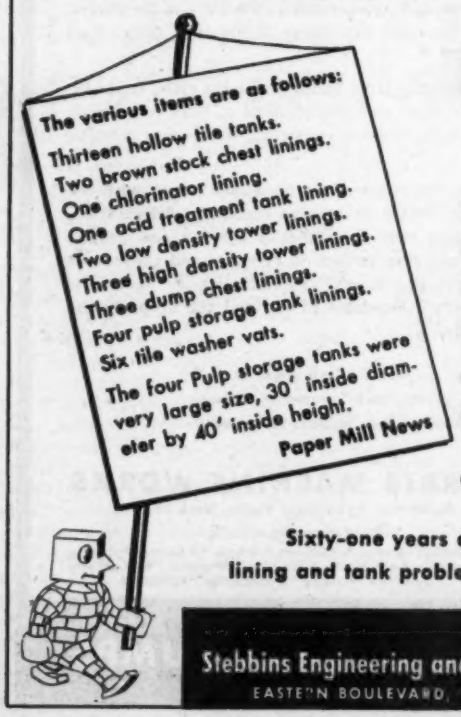
During the war, inventories of pulpwood, wood, pulp, paper, and paperboard have been depleted all along the pipeline, and these will have to be built up. The widespread substitution of paper and paperboard products for steel, tin, lumber, and other scarce materials in the early stage of the war opened new markets for these products which may be retained. Striking advances were made in paper use during the war, particularly in waterproof packaging materials. There is reason to anticipate postwar consumption of printed materials at or close to the record-breaking levels established during the first years of the war. The premise of a high-production economy indicates continued high levels of consumption for paper and paperboard wrapping and packaging materials.

The outlook for pulp and paper exports is similarly favorable. It will be some time before countries like France, Belgium, and the Netherlands, which normally produced a sizable part of their own requirements, achieve normal paper production. Similarly, it will take a long time for Northern Europe (Sweden, Norway and Finland), which normally supply the import requirements of Western Europe, to reach normal export levels and costs. United States pulp and paper producers, therefore, should be able to find willing markets in both Europe and Latin America for whatever part of their total production can be spared by domestic consumers.

Various forecasts have been made of the levels of paper and paperboard production which may be attained in the postwar period. There seems little doubt, however, that the domestic market could absorb close to 20,000,000 tons of domestic paper and paperboard production annually, in addition to almost 3,000,000 tons of imported newsprint. This level of production would be about 50 per cent larger than that of 1939.

It is not quite clear just how soon such a level of production could be reached. Output of pulp and paper mill machinery has been limited during the war, and some replacement will be necessary. The same is true of printing and publishing equipment. On the raw material side, it is undetermined to what extent the imminent withdrawal of prisoners of war from pulpwood cutting will affect the industry, or how soon workers released from military service and war production will find their way back to the woods. A sharp decline in wastepaper collections may also be anticipated, at least temporarily, although vigorous efforts will be made to maintain them at recent levels. In spite of these uncertainties, the near and longer-term outlooks for the pulp and paper industry appear bright for both production and employment.

"All tile linings and tile tanks required for the stock handling system and bleach plant were STEBBINS"


The various items are as follows:
Thirteen hollow tile tanks.
Two brown stock chest linings.
One chlorinator lining.
One acid treatment tank lining.
Two low density tower linings.
Three high density tower linings.
Three dump chest linings.
Four pulp storage tank linings.
Six tile washer vats.
The four Pulp storage tanks were very large size, 30' inside diameter by 40' inside height.
Paper Mill News

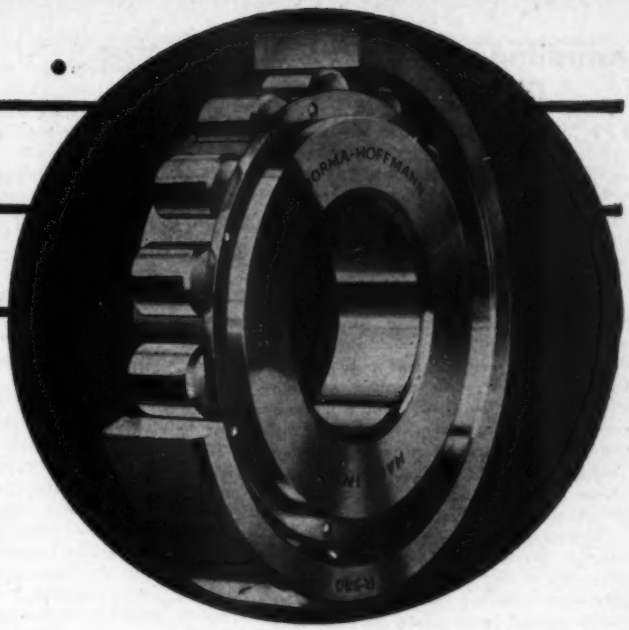
This list was printed before P.H.(Pearl Harbor) but Stebbins is still headquarters for complete lining service, providing:

ONE source of supply
ONE responsibility for satisfactory service
ONE standard of quality

Sixty-one years of specialization in solving lining and tank problems for the paper industry.

Stebbins Engineering and Manufacturing Company
EASTERN BOULEVARD, WATERTOWN, NEW YORK

For . . . . SEVERE RADIAL and SHOCK LOADS



Test this NORMA-HOFFMANN PRECISION ROLLER BEARING under your hardest conditions. Subject it to heavy continuous loads. Expose it to shock loads. Operate it at high speeds. You'll find it will stand up better than any other single-row bearing, of any type.

A few of the design features explaining this stand-up-ability are: short, solid, parallel roller construction giving maximum load contact area; completely machined, heavy-duty bronze retainer; extreme PRECISION in every detail.

"NORMA-HOFFMANN" PRECISION BEARINGS

Write for the Catalog of PRECISION BALL, ROLLER AND THRUST BEARINGS. Let our engineers work with you.

NORMA-HOFFMANN BEARINGS CORP'N., STAMFORD, CONN., U. S. A.

Bob Williams — Howard Gerber
Barney Benson — Peter Talbot, Jr. — Paul Foster

WILLIAMS-GRAY CO.

221 North La Salle Street
CHICAGO 1, ILLINOIS

•

Specialists in

PAPER MACHINE CLOTHING
and other mill supplies
for over 35 years.

•

Representing manufacturers of

Lindsay and Niagara Wires
Knox "Excelsior" Felts
Siamese and Richland Dryer Felts
Tensilastic Rubber Rolls
Splicing Tissues, Etc.

QUICK - EASY REMOVAL of SCALE, SLUDGE, RUST

AURAND CLEANING TOOLS

ELECTRIC or PNEUMATIC
2 sizes of each

FOR ANY HARD SURFACE: IRON — STEEL — BRICK — CONCRETE — ETC.

It's easy to remove paint, scale, rust and other accumulation with Aurand Cleaning Tools. Powered, rotary chipping does a thorough cleaning job in less time. No special skill required. Even depth surface is assured by an adjustable shoe control. Cutter heads are renewable.

For further information write Dept. 649

AURAND MFG. & EQUIP. CO.
2643 Colerain Avenue • CINCINNATI OHIO

Handling the Disabled Veteran*

▶▶▶ MANAGEMENT will face delicate psychological and sociological problems in handling all returning veterans, but the difficulties will be multiplied in the case of those men who return disabled. It is in this area especially that executives will be called upon to decide questions outside the range of normal personnel practice.

The physically handicapped veterans, the "psycho-neurotics," the seriously disabled, are all entitled to re-employment so long as they can do their old jobs—or some other jobs in the company—reasonably well. In some cases, minor modifications of the machine or work routine will overcome the handicap. In all cases, management must be prepared to meet individual problems that may sometimes border on the neurotic and psychiatric.

The first thing to remember is that such veterans would not have been released into civilian life if trained experts and physicians had not considered them restored to the point where they were capable of sound adjustment. They merely need a helping hand as they begin their readjustment. It is the purpose of this presentation to indicate just how the helping hand can best be extended in the various types of cases the executive is likely to face.

Operational Fatigue. This is what used to be called "shell shock" in World War I. Generally, it applies to an individual who is unable to fulfill his daily tasks because of excessive anxiety or insecurity or fatigue feelings which he cannot get rid of, even though at times he perceives they are nothing but the products of his own mind. For aid in handling people in this category, management should call on the specialist in mental hygiene.

Recommendation: Since the readjustments of such a veteran are likely to be complex and difficult, the foreman and everyone else dealing with him can be immeasurably assisted by the personnel director and by the plant physician, together with psychiatrist and trained psychiatric case workers. In view of the probable scarcity of such experts, it may be worth while to explore *at once* with other companies in your community the practicability of sharing the service of specialists in mental hygiene. It may be possible to have these experts prepare manuals to guide foremen and other supervisors in the handling of veterans suffering from operational fatigue. Supervisors should be instructed in at least the rudiments of recognizing such danger signals as malingering, accident proneness, excessive horsing around, drunkenness, melancholia, and undue irritability. It is also important for the workers who come in contact with such returned veterans to understand the problem, so that they will not be unduly affected by any manifestations that may occur, and will not unconsciously act in a way that might slow the veteran's readjustment.

Handling the "PN." The designation "psycho-neurotic" has been abused and confused to such an extent that the Army and Navy have discarded the use of the term. Instead, when a soldier or sailor is discharged for neurotic reasons the certificate now reads, "Not suited for military service." This is a more accurate description in the overwhelming majority of cases. It means simply that a particular individual is not tempermentally suited to the rigors and strain of military life. Experts very emphatically point out that it does *not* mean a man is unable to succeed in civilian life.

Observation: When the PN is rehired, management will find it most advisable to keep the label confidential. Certainly only the personnel director and perhaps one or two other high ranking executives should know about it, since most people—including department heads, supervisors, as well as rank and file employees—are likely to display a certain stand-offishness or suspicion, whether warranted or not.

Observation: There are two types of PN's among today's job applicants. The first is the man who has not participated at all in military life, who has not even gone to a camp or cantonment, but who was screened out at an induction center. Generally it can be assumed that he is the same person he was before his rejection. The chances are that he will do as well on a job as anybody else of equivalent background and skill.

The second type is the returning serviceman with an authentic war neurosis wnich arises from profound inner conflicts between, for example, patriotism and self-preservation. This kind of neurosis may occur even before a man has seen active combat. Although it sometimes leads to a crack-up, it should also be remembered that some 38 per cent of "psycho-neurotic combat casualties" go back to duty within two days of receiving psychiatric treatment at the front. 80 per cent of those who were serious enough cases to require hospitalization have been restored to health and returnd to Army duty.

Recommendation: Since the PN label can mean nothing or anything, management must analyze with special care the qualifications of the returning PN. In this connection, aptitude testing plus careful and understanding interviews will assist in placing the PN on the kind of job where he can make good. Maintain as *personalized* a contact with such employees as possible. This means a display of interest in how they are making out. It does not mean that they should be pitied, pampered, or patronized. Any hint that they are not self-sufficient should be avoided.

Jobs for Handicapped Veterans

Wartime experience has demonstrated that the physically handicapped workers can be employed just as efficiently, *given the right job*, as the normal person. As a matter of fact, the weight of available evidence indicates that if the handicapped worker is properly placed, he is on the whole somewhat more productive, in terms of both quality and quantity, than normal employees. The accident rate among handicapped personnel, on the basis of scattered but fairly conclusive studies, is some 14 per cent lower than for the average employees, since they are more consciously cautious. Their absenteeism and turnover records are 7 per cent better than the run of employees.

A great many veterans with a leg, an arm, one or both eyes missing, deafened, nervously paralyzed, or otherwise incapacitated will have to be rehabilitated and reemployed. The knowledge gained in the use of handicapped workers during the wartime manpower shortage furnishes first-rate guideposts to the hiring of disabled veterans.

Thus, there are three basic procedures for placing the disabled veteran (or any other handicapped worker) on the kind of job where he will be proficient and productive:

1. The job analysis.
2. The medical examination.
3. The follow-up.

The Job Analysis. The personnel director, foreman production engineer, and safety chief should pool their efforts in making a job analysis of various operations to assess (a) the physical requirements of every task, (b) the inherent hazards, (c) hours and shift schedule, (d) amount of supervision indicated, (e) special knowledge (such as ability to read blueprints), (f) past experience, (g)

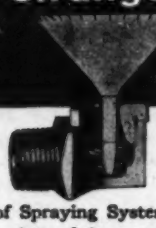
(*) From *Rehiring Your Company's Veterans*, publication of Research Institute of America.

LUCK

and These

SPRAY NOZZLES

Are Strangers



Spraying liquids at a closely controlled rate, in sharply defined spray patterns at precise spray angles is a specialty of Spraying Systems nozzles. Available in a wide variety of sizes, capacities and types, these nozzles are actually designed to do better, faster work on any spraying operation.

Your free copy of Catalog No. 22 will make a valuable addition to your reference file. Write for it today.

SPRAYING SYSTEMS COMPANY

4021-G West Lake Street · Chicago 24, Illinois

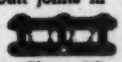
SPECIALISTS IN THE DESIGN AND MANUFACTURE OF SPRAY NOZZLES

A stitch in time!

Typical repairs and patches made with Flexco HD Rip Plate

THOUSANDS of men in industrial plants, mines and mills all over the country are doing just what this man is doing. They are cutting costs by repairing conveyor belts with Flexco HD Rip Plates.

WRITE TODAY FOR BULLETIN F-100 that shows how easy it is to repair rips, to strengthen soft spots and to put in patches by using Flexco HD rip plates. The bulletin also shows how to make tight butt joints in both conveyor and elevator belts with Flexco HD Belt Fasteners. These fasteners are made in six sizes. Furnished in special analysis steel for general use and in various alloys to meet special conditions.



Flexco HD Rip Plate

Flexco HD Belt Fastener

FLEXIBLE STEEL LACING CO.

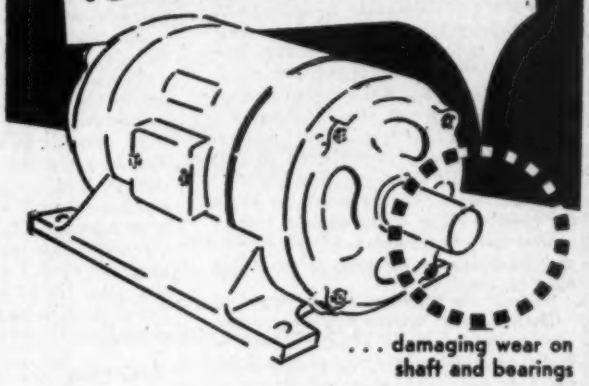
4896 Lexington St., Chicago, Ill.

FLEXCO HD BELT FASTENERS

Sold by supply houses everywhere

IT *CAN* HAPPEN *here*

TO THE BEST MACHINE



. . . damaging wear on shaft and bearings

"Penny wise and pound foolish" is the old adage that best describes the practice of using any old coupling with a good and costly machine. By preventing wear to the shaft and bearings

YOU ACTUALLY **SAVE**

WHEN YOU SPECIFY AND USE

WALDRON *Gear Type* COUPLINGS

Forged steel hubs and sleeves (no welding) avoid need for frequent repair or replacement; complete freedom of movement between hub and sleeve prevents any added stress on shaft and bearings while compensating for misalignment. Other design refinements described in our Catalog No. 56.

COUPLING DIVISION

JOHN WALDRON CORP.

Main Office and Works

New Brunswick, New Jersey

COUPLINGS

length of time for reaching satisfactory level of efficiency.

The placement of the disabled covers all the usual criteria that enter into intelligent placement—*plus* the matching of the individual's physical defects to the requirements of the job. This may require certain re-engineering, such as the substitution of a foot pedal for a push button on a punch-press for a veteran who has lost a hand.

The Medical Examination. In dealing with the disabled veteran, the medical examination must emphasize not the *physical abilities* of the person, but rather the physical restrictions that must be taken into account. The physician should be supplied with a detailed job analysis sheet on which the physical requirements and related work conditions of every job in the company are listed. The physician can check the physical status of the disabled veteran against this chart, recommend specific jobs and warn against the type of work that must be avoided.

Illustration: A veteran with a heart murmur or other cardiac ailment should be placed on a job where the work is light, the flow even, and where no change of pace gives rise to emotional tension. A veteran with a minor affliction resulting from direct external injuries such as a shrapnel wound, or an internal condition such as arrested tuberculosis, should be placed in a clean, dustless, well-ventilated part of the plant. A veteran who has recovered from a minor shoulder wound may be as good as new from a physical standpoint, but may still be suffering from nervous shock that would put him in the psycho-neurotic category. In this instance, the physician might recommend that he never be allowed to work alone. At the same time, he should not be placed in a noisy, congested part of the plant lest the sheer over-stimulation cause him to withdraw into himself. Again, he should not be placed on a job demanding pressure peaks or sudden shifts in speed or other strain calling for the ability to adapt quickly and suddenly to new situations.

Recommendation: Every report by the physician dealing with the disabled veteran should indicate whether the case is remediable or non-remediable. Statistics from war industry show marked decreases in accidents and marked increases in output when the handicapped have been given constant checkups and corrective treatment where that is possible.

The alert plant physician will be especially on the look-out for general physical deterioration which may be obscure in origins but definite in symptoms. This is usually the result of service in tropical or arctic climes. In the former zones, servicemen often acquire malaria, dysentery, dengue, and various fungus infections which may recur long after a "cure" has been achieved. Soldiers stationed in the far north often experience a special variety of "shock" which aries from excessive cold. In all such cases, the veteran has to be given ample time to build up his physical and psychological strength.

The Follow-Up. To insure satisfactory performance from the disabled veteran once he is placed on the job, management must follow through to determine the success of his adaptation. In this respect, it is often advisable to keep a score card on which the foreman and the plant physician record:

1. Incidence of illness, signs of unusual fatigue, inability to reach production minimum, accidents.
2. Findings from a periodical medical checkup, mention of any corrective action taken.

Recommendation: Once the disabled veteran has been acclimatized, special restraint should be exercised not to transfer him to another job, unless absolutely necesary, for at least six months. The need to make new adjustments, to "go through it all again," may impair such a veteran's self confidence. When transfers are unavoidable, the medical record and the placement chart should be carefully consulted again.

Recommendation: Physicians advise against the segregation of handicapped workers into special groups and occupations of their own. It will hasten the assimilation of the disabled veteran if he is accepted as an equal in the regular labor force. Although segregation can at times result in higher productive efficiency, it should be guarded against for psychological reasons. The disabled veteran wants to be accepted as "a normal person." Everything that helps him think of himself as normal will quicken his adjustment to his job and to civilian life in general.

State Compensation Laws and the Handicapped. The disabled and handicapped worker falls into the classification of "second injury case" when he suffers an accident on the job. The one-armed man who loses his remaining arm becomes a total permanent disability under compensation laws. In order to reduce the extra risk faced by employers who employ the handicapped, many states have established either second injury funds or equivalent provisions. Check the laws of your state.

Recommendation: Insurance companies are revising their rules to facilitate the re-employment of the disabled veteran. It is wise to consult with your insurance representative concerning the exact degree of your responsibility when the disabled veteran is placed on your payroll.

Fiber Molding Process for Insulating Purposes

▶▶▶ FIBROUS materials, such as sheets of specially prepared kraft, asbestos, rags, coroa, rope, and other materials, are used in the fiber-molding process developed at the General Electric's Pittsfield Works to insulate irregular-shaped parts or windings

LEFT—Charging the beater. RIGHT—Stock chest with a pulp mold removed. Motor to right stirs the fiber suspension within tank and also operates the vacuum.

Low-Cost Way To Keep Washrooms Sanitary!

Washrooms, locker rooms and lavatories are the natural habitats of obnoxious, unsanitary odors. Removing these odors is the first step in sanitizing washrooms. Oakite TRI-SAN is designed specifically to perform this and the two related sanitation tasks, disinfecting and cleaning, in the same operation!

Oakite TRI-SAN's triple action costs remarkably little . . . only a penny for adequate solution gallon. A free 20-page booklet telling Oakite TRI-SAN's whole story is yours on request. Write for your copy TODAY!

OAKITE PRODUCTS, INC., 16 Thames St., NEW YORK 6, N. Y.
Technical Service Representatives in All Principal Cities of the United States and Canada

OAKITE *Specialized* **CLEANING**

FLEXO JOINTS

provide a flexible or swing pipe connection for conveying steam, compressed air, water, oil and other fluids under high or low pressure. They will give you maximum service at low—extremely low—maintenance cost. Made of bronze for hard usage and lots of it, the life of FLEXO JOINTS is indefinite. And they are as simple as they are efficient; no springs to lose or ground surfaces to wear.

Install them on pipe lines that are moved or swung in different directions or on machinery or equipment that must be supplied with any fluid while in motion.

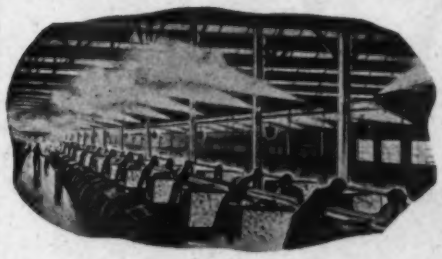
4 styles—iron pipe sizes to 3 inches. Your regular supply house has them or order direct from

Style "B"

FLEXO SUPPLY COMPANY, Inc.
4228 Olive St. St. Louis (8), Mo.
In Canada:
S. A. Armstrong Ltd.
115 Dupont St. Toronto (5)

MAN-MADE MIST

Plays Havoc with Ordinary Wood Roofs



80%+ humidity at 75° F., day in and day out, makes mighty rough conditions for ceiling and roof structures of wet-process plants. Plain lumber and other materials often rot, rust or crumble surprisingly fast. Wolmanized Lumber*, with Wolman Salts* preservative driven deep into the wood, is highly resistant to these wringing-wet atmospheres; fibre-fixation prevents its washing out or leaching, assures added years of service life.

WHERE'S ALL THE WOOD?

Billions of feet of lumber are still needed to fight the war. But war plants are part of our fighting force and lumber for critical plant maintenance and repair can be had. Write us for the names of suppliers who may be able to handle your order. Chemicals for treating are available at all our plants.

1668 McCORMICK BUILDING, CHICAGO 4, ILLINOIS

LEFT—The before and after of a transformer coil. RIGHT—Winding core on insulated coil

with wet pulp. This process has eliminated the conventional slow taping operation, provided a uniform distribution of insulation fiber on conductors, and can, because of its flexibility, be readily applied to irregular-shaped transformer parts as used in instrument transformers.

The materials are defibered in water in a beater. The beater is lined with rubber to prevent corrosion which would create impurities and so lessen the strength of the insulation.

After thorough defibering, the fiber suspension is pumped into another tank or stock chest. Here a motor mixes the suspension by air-stirring. The object to be insulated is wrapped with tape. A fiber tube, one end of which is attached to a hose from a vacuum pump, is inserted inside the tape. The form is then suspended in the pulp and the pulp sucked around the part to be insulated. The woven structure of the tape provides a channel for the water to be removed from the pulp. The form is left in the slush stock until the desired wall thickness is obtained. The molded pulp, when removed, is sucked almost dry by the same vacuum. The fiber tube may be removed or left in place depending upon the particular part. If necessary, any imperfections are smoothed out manually or by mechanical pressing.

Complete drying is accomplished by placing the insulated part in suitable ovens, but before transfer, it is wound with white tape to protect it from impurities. The completed molds are then checked with the blueprints, and are ready to be used with the other component parts.

Use of Liquid Sulphur Dioxide in Fortifying Sulphite Cooking Liquors*

▶▶▶ In the production of sulphite pulp, it is generally agreed that high total sulphur dioxide concentrations in the cooking acid are beneficial. The following facts have been demonstrated by McGovern (*Paper Trade J.* 103, No. 20; 29-42, Nov. 12, 1936) regarding sulphur dioxide concentration in the sulphite cooking of certain wood. These facts probably will apply in varying degrees to all varieties of wood used in producing sulphite pulp.

1. Acids of higher sulphur dioxide content than are generally used, penetrate wood chip more readily than acids of lower concentrations.

2. A step-up in the sulphur dioxide content of the acid increases the rate of pulping so that digestion at the same maximum temperature can be made in shorter time.

3. Increased pulping activity of digester liquors with high sulphur dioxide content permit a considerable reduction in the pulping temperature for a constant digestion time.

4. Pulp produced at lower digestion temperatures gives higher yield and improved chemical and physical properties in the finished product. This is due in part to greater lignin removal with less cellulose destruction at the lower digestion temperature, as would be permitted by the use of higher SO_2 concentration.

Practical Advantages

For various reasons it is not always practical to take full advantage of these benefits either by using pressure absorption system or by fortification with liquid sulphur dioxide. However, there will always be found a minimum concentration below which it becomes impractical to operate. These low acid concentration levels may be caused by seasonal conditions such as high absorbing water temperatures and high cooling water temperatures or they may be the result of difficulty in properly scheduling digesters. Wet or green wood cooks may dilute the acid or require higher concentrations in order to get the proper penetration. In cases such as these, it is entirely practical and economical to use liquid sulphur dioxide to fortify the cooking acids. It will pay for itself in uniform cooks and better screening.

Liquid Sulphur Dioxide

Liquid sulphur dioxide is a liquefier gas with an inherent pressure and is shipped in steel containers in the same manner as chlorine. It can be supplied in both single-unit and multi-unit tank cars as well as smaller cylinders for experimentation. It can be stored, piped, metered and applied with simple and inexpensive equipment. The exact manner of introducing it in the individual mill will depend upon the acid system employed. Ordinarily, it is more practical to add the sulphur dioxide in the liquid phase to the cooking acid. In this manner, it can be handled much more rapidly, and an immediate build-up can be obtained by introducing large quantities for short periods as required. Other advantages of using sulphur dioxide in the liquid form are that the vaporizing stop is eliminated and the pipes, rotameters, valves, etc., can be of a smaller size and consequently, less expensive. It is possible, however, to vaporize the liquid in a steam-jacketed evaporator and add the sulphur dioxide in gas phase if desired.

Container Sizes

Where single unit tank car quantities are purchased, the buyer usually provides a storage tank so the contents of the car can be transferred and the car returned to the supplier. This storage equipment consists of a horizontal cylindrical pressure vessel, tested for 150 lb. gage working pressure. It is fitted with a gage column, compressed air line, loading and unloading lines. The storage tank is normally placed near a railroad siding although this is not essential. If storage facilities are not provided, shipment may be made in multi-unit tank cars of 15 one-ton containers (30,000 lb. net) which can be removed from the car and placed on a rollway.

Handling and Metering

From the storage tank or supply drum, the liquid sulphur dioxide can be conducted to the point of application in ex-

*SO_2 Bulletin 941, Ansul Chemical Company, Research Department.

52 YEARS OF "POSTWAR PLANNING"

Get a Good Start And a Good Finish With

NORWOOD

WATER FILTERS AND PAPER FINISHING MACHINERY

War and its subsequent reconversion problems are nothing new to The Norwood Engineering Company. Three major wars have occurred during its half century of existence but they have never halted for a moment the steady march of improvement in the designs of Norwood Filters, Calenders and Paper Finishing Machines. Norwood engineers can help you mightily in reconversion, modernization or addition problems.

Write us for full data and technical assistance with your plans. Filter Portfolio "F" or Machinery Portfolio "M" are yours for the asking.

The NORWOOD ENGINEERING COMPANY

16 N. MAPLE ST. FflorENCE, MASS.

WATERBURY FELTS

are made by

H. Waterbury & Sons Co.

Oriskany, New York

PERFORATED METAL *Screens*

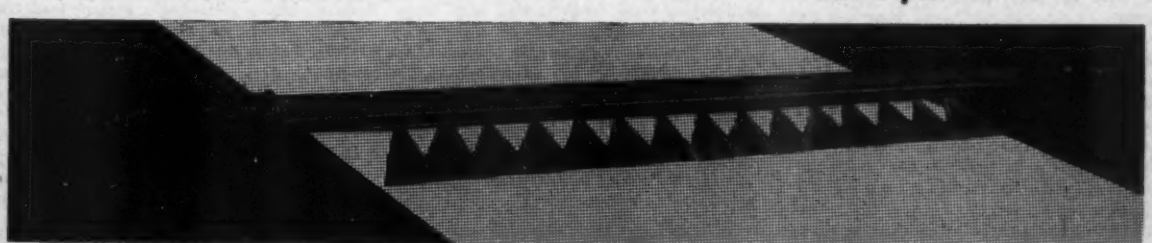
Precision perforations in all sizes for large production and screen durability

Copper • Steel
Monel • Stainless Steel
Chemical Resisting Alloys

The Harrington & King PERFORATING Co

5654 Fillmore St., Chicago 44, Ill. 144 Liberty St., New York 6, N. Y.

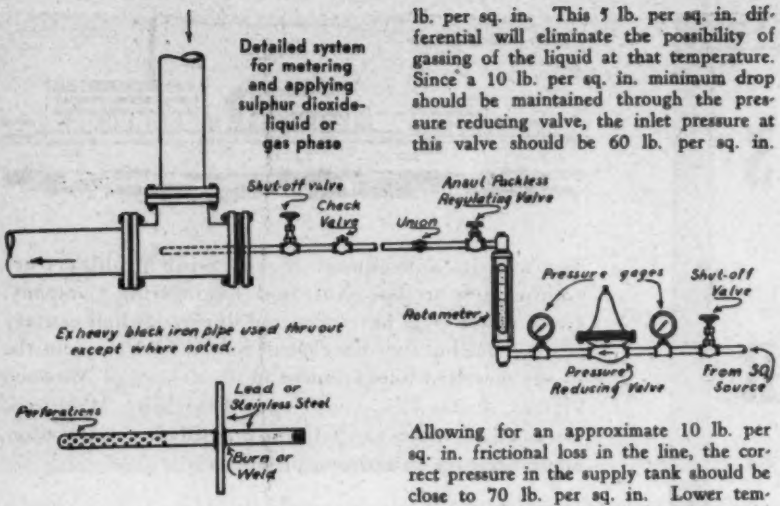
For **SHOWER PIPES**—*Call Headquarters!!*



BULLETIN 134

SANDUSKY FOUNDRY & MACHINE CO.

Sandusky Ohio



tra heavy black iron pipe (See accompanying illustration). A pressure reducing valve with pressure gages on either side will provide a supply of constant pressure sulphur dioxide at the rotameter. This constant pressure will insure unchanging flow of material through the rotameter at any particular valve setting. The rotameter accurately meters the rate of flow of sulphur dioxide and can be calibrated in pounds of sulphur dioxide per minute or any other suitable unit of measurement. The control or regulating valve is placed immediately after the rotameter. From here the sulphur dioxide passes through a check valve, shut-off valve, and then through an injector into the stream of cooking acid to be fortified. The injector can be made of a short length of lead or stainless steel pipe burned or welded into a blank flange and installed in a tee or at some other suitable place in an acid line as pictured in the print. The injector pipe should have a closed end and a series of small holes, approximately 1/16 in. in diameter, drilled along the side over a distance of 6 to 10 in. starting near the tip.

Application

If the acid system includes an accumulator, it is advisable to introduce the sulphur dioxide to the acid in the inlet line of that unit. Where no accumulator is present, the sulphur dioxide can be added to the raw acid in the last acid storage tank or possibly to the finished acid passing from the acid storage tank to the digester.

In handling liquid sulphur dioxide, dry air pressure is applied through the storage tank or supply drum. This pressure must be sufficiently high to cause the liquid sulphur dioxide to remain a liquid while passing through the rotameter. Otherwise, the liquid will vaporize in the rotameter and thus impair the metering accuracy. To illustrate this point, assume that the liquid sulphur dioxide in the storage tank is at 80 Fahr. At this temperature, the vapor pressure of liquid sulphur dioxide is 45 lb. per sq. in. gage. Thus, the pressure at the rotameter should be about 50 lb. per sq. in. This 5 lb. per sq. in. differential will eliminate the possibility of gassing of the liquid at that temperature. Since a 10 lb. per sq. in. minimum drop should be maintained through the pressure reducing valve, the inlet pressure at this valve should be 60 lb. per sq. in.

Allowing for an approximate 10 lb. per sq. in. frictional loss in the line, the correct pressure in the supply tank should be close to 70 lb. per sq. in. Lower temperature liquid sulphur dioxide would have a correspondingly lower vapor pressure and during cool weather, a lower air pressure on the supply container would suffice. Another factor which will affect the pressure to be maintained in the storage tank will be the "head" of pressure against which the sulphur dioxide must be forced in order to enter the stream of acid. The pressure in the sulphur dioxide line must, of course, be higher than the maximum pressure in the acid line to prevent acid backing up in the sulphur dioxide system.

Operation

To operate a fortfication installation, either the acid maker or digester operator can decide the percentage of sulphur dioxide concentration increase desired in the acid. He then will estimate the rate of flow of acid in the line and will open the liquid sulphur dioxide control valve to the proper rotameter setting to provide the necessary rate of sulphur dioxide flow.

To summarize, liquid sulphur dioxide is invaluable to level off the valley in the total sulphur dioxide concentration curve in a sulphite mill. By using a comparatively few pounds of this material occasionally, regular digester schedules can be maintained in spite of wet or green wood cooks, high water temperatures, etc. It is thus possible to maintain the quality and yields of sulphite pulp in spite of these circumstances.

Convention Papers . . . Abridged

Planning Comparative Tests on Case Liners*

HENRY A. WOLSDORF, Chairman,
Container Co-ordinating Committee,
War Production Board

The purpose of this paper is to indicate the nature and extent of one of the development projects on packing and packaging that was conducted by the Container Coordinating Committee, W.P.B., for the armed services.

In the latter part of 1943, reports were being received that case liners being used in military packing were failing. Failures were occurring in the case liner material as well as at seams and closures. The Container Coordinating Committee was requested to obtain information that would permit satisfactory corrections to be made. After some study, it was decided that the first step was to observe the performance of various types of case liners in boxes when subjected to rough handling under various conditions of temperature and humidity.

Since military packages are destined for delivery to arctic bases as well as to tropical bases, it was decided to make tests under conditions simulating these two service conditions. It was difficult to decide on the severity of the test but it was planned to establish this on the basis of actual performance of case liners in the field. Certain liners were reported to be giving satisfactory performance while others were reported to be failing. The severity of test conditions was, therefore, to be adjusted so as to permit the satisfactory liners to pass thee test and the unsatisfactory liners to fail in the test.

In deciding on the case liners to be tested, it was planned that all types of construction of materials meeting the requirements of Federal Specification UU-P-271a should be included. The list of case liners to be tested, therefore, included materials that were reinforced and others that were not reinforced, creped and uncreped, treated or impregnated and untreated, materials having high water vapor permeability and low water vapor permeability, and finally asphaltic and non-asphaltic laminated materials. The above list was to be expanded to include a variety of special waterproof materials that were being developed, introducing some desirable physical characteristics that were not available in standard commercial products.

The size of boxes to be used in the tests also presented a problem. Two classes of boxes are being used to a large extent by the military services. One is a small box having a gross weight not exceeding 70 pounds. This box is intended to be handled by one man. The other box is considerably larger, having a gross weight not exceeding 200 pounds. This box is meant to be handled by two men. The small box usually has a greater load concentration on the faces of the box but the large box is subjected to greater wracking. It was decided to include boxes of each of these sizes so as to determine both of the effects just mentioned.

As to the types of boxes to use, it was felt desirable to include all of the common commercial types. For the large size, nailed wood, plywood and wire-

(*) Abridgment of paper presented "by title" at the annual meeting of the Technical Association of the Pulp and Paper Industry, held in New York City, February 19, 1945.

Here is a paper to satisfy the experts — in color, in texture, in printing surface.

ECUSTA

Fine Flax Paper

Suitable for offset, gravure, or letterpress reproduction, Ecusta paper has quality, dignity and distinction.

ECUSTA PAPER CORPORATION
PISGAH FOREST • NORTH CAROLINA

Fine Flax Air Mail . . . Fine Flax Writing . . . Bible Papers
Special Makeready Tissue . . . Thin Paper Specialties

GEORGE F. HARDY
Consulting Engineer to the Paper Industry since 1900
441 Lexington Avenue, New York 17, N. Y.
Member—Am. Soc. C. E.—Am. Soc. M. E.—Eng. Inst. Can.

Consultation	Paper and Pulp Mills
Reports	Hydro-Electric and
Valuations	Steam Power Plants
Estimates	Plans and Specifications

MISCO "C"
THE CORROSION RESISTANT ALLOY
CAST • ROLLED • FABRICATED
for all equipment exposed to corrosion by sulphite acids
MICHIGAN STEEL CASTING CO., DETROIT 7, MICH.

ORDER NOW! NEW EDITION FOR 1946!
The Paper Makers' Directory of All Nations
The Red Book of the British Paper Industry
Alphabetically arranged—Printed in Clear Type
Demy octavo—Cloth bound.
Price 25/—net, or Post Free 27/—Sterling.
Office of the Directory
30 Bedford Street, Strand London, W. C. 2, England

TRIMBEY MACHINE WORKS
GLENS FALLS N.Y.
PULP SCREENS
WEIGHT AND CONSISTENCY REGULATORS
METERING SYSTEMS FLOAT VALVES

A world of water from a world of PEERLESS PUMPS

The tremendous Peerless water production has attained world-wide significance. Now offering the most complete line of vertical and horizontal pumps, Peerless can supply the exact type of pump best engineered for your well. If you are planning to "step up" your water supply, consult with Peerless. You will benefit by new Peerless developments—increased precision, design improvements and enlarged field service. With the recent acquisition of Dayton-Dowd Company, Peerless now offers horizontal pumps of practically every type.

Capacities — 10 to 220,000 gallons per minute.

Two Improved Domestic Systems
Peerless Water King and Jet

Peerless is producing the two most outstanding domestic pumping systems—the Peerless *Water King* Pumping System, for shallow wells and the improved Peerless-*Jet* Water System for deep or shallow wells. Both systems are 100% automatic. *Water King*—up to 1300 gallons per hour; *Jet* up to 5000 gallons per hour.

Peerless Distributors and Direct Factory Representatives are located in every State. Ask for name of Distributor nearest you.

PEERLESS PUMPS
PEERLESS PUMP DIVISION
Food Machinery Corp.
VERTICAL & HORIZONTAL
FACTORIES
LOS ANGELES 31, CALIFORNIA
301 West Avenue Twenty-six
QUINCY, ILL. • CANTON 6, OHIO

bound boxes were selected and for the small size, nailed wood, wire-bound and V2s fiberboard boxes. These types cover a range from a very rigid to a very flexible type of container. All boxes were to be made to meet the requirements of the U. S. Army Specification No. 100-14A, U. S. Navy 39P-16-A.

The number of boxes to be tested for each kind of case liner, size, and type of box was set as ten maximum in order that accurate test results may be obtained. If sufficiently consistent results were indicated for any particular liner, it was agree that fewer boxes may be tested but never less than five.

A tentative test procedure was then set up to cover the kinds of tests desired. In the case of the arctic test, the test boxes were to be given initial rough handling, then exposure at a low temperature until the temperature inside the test box was —10° Fahr. Additional rough handling was prescribed immediately after the box was removed from the cold room. The tropical test was to include initial rough handling, exposure at 100° Fahr. and 90 per cent relative humidity with intervals of spraying of water to simulate rain. Additional rough handling was also prescribed immediately after the conditioning phase.

Some thought was given to the manner in which damage to case liners was to be ascertained. Large holes and tears are readily visible to the eye. There are, however, pin holes and areas of low resistance to water penetration that are not easily detected by the unaided eye. In order to locate and evaluate these hidden failures, it was decided that each box should be sprayed for about one hour after the arctic and after the tropical tests. This arrangement permitted water to find the weak spots in the case liners, thereby wetting the contents, and also set a measure for the penetration of water through the case liner.

It was realized that the kind of load used in the test boxes would greatly influence the test results. Since many of the boxes of the sizes previously indicated are used for spare parts, a type of local simulating spare parts was selected. The result was a loose, shifting load which would exert serious strains on the case liners.

With the preliminary plans for the tests completed, there remained the selection of a laboratory to perform the tests. The test schedule, indicated that about 2,000 to 2,500 boxes were to be tested and, in order to obtain the test data in a reasonable time, it was considered desirable to test 40 boxes per day. This number of boxes to be tested daily presented unusual problems for a laboratory, such as space required for storing knocked down boxes and liners, space for unpacking and packing the test boxes, facilities fo making up and strapping the test boxes, facilities for handling and moving the test boxes, sufficient parts that made up the load so that boxes could be packed while others were being tested. The full-time requirements for seven operators and helpers and two supervisors also presented a personnel problem. Finally, it was found that no laboratory had all of the necessary rough handling and conditioning equipment already installed. A survey of laboratories indicated that Package Research Laboratory, Rockaway, New Jersey, was best prepared to undertake the test program. A contract for the tests to be performed at this laboratory was arranged by the Office of Production, Research and Development and, after conditioning rooms were constructed there, work on the tests was begun.

A complete description of the performance tests on case liners is given in the paper titled "Comparative Rough Handling Tests on Various Types of Case Liners," by Earle R. Stivers, Director, Package Research Laboratory, Rockaway, N. J. Information on the results of these tests and on the results of the tests being made at the National Bureau of Standards will be presented at a future date.

Incentive Wages*

ALBERT RAMOND
Albert Ramond and Associates, Inc.

Full employment at good real wages is our number one postwar problem. This demands making maximum use of all of our natural, productive, and distributive resources to insure the low costs, low prices and good wages necessary to maintain a continuously expanding market. All fair and legitimate means of promoting these objectives are, therefore, desirable. Since wage incentive has proven to be one of the most effective methods, wage incentive will be a highly desirable postwar form of wage compensation.

The term "incentive" and its application have been frequently misunderstood and occasionally misused. An incentive is something designed to stimulate greater response in a certain direction through providing a reward, in this case a financial reward, for accomplishments which are better than a fair, reasonable, norm or standard. It should never be a means of increasing pay irrespective of whether the actual contribution really deserves a special reward. The closer the tie-up between reward and accomplishment, the more effective the incentive will be.

The incentive pay formula is not the most important thing in an incentive pay plan. The most important thing is the philosophy and basic principles upon which the incentive plan is built and maintained, regardless of formula. The same incentive formula may succeed or fail, depending on its interpretation, application and administration. There are wide differences in the technical build-up of many equally successful plans.

Many assume that the simplest form of production incentive, i.e., straight piece or straight tonnage rates, is always best, but this is true only when there is a close, even relationship between production and the effort and skill required. In many modern industrial operations, there is no

(*) From an address before the Committee on Economic Development, Philadelphia, Pa., May 24, 1945.

WHERE DECAY, ODOR, TASTE, OR ACID IS A PROBLEM, USE
Tidewater
RED CYPRESS

Read What Authorities Say About Its Superior Qualities

Romeyn Beck Hough, author of "American Woods", says of Cypress "Its great durability, immunity from the attacks of parasites, and non-liability to great shrinking or warping make it one of our most valuable woods for all woodwork exposed to weather, for tank construction, cooperage, etc. Its value . . . is enhanced by its comparative freedom from coloring or flavoring ingredients".

Phillips A. Hayward, author of the volume on Wood in Chandler Cyclopedia, says that Cypress is "easy to work, available in large dimensions, and resistant to decay". It is also "resistant to changes in moisture, resistant to acids, and imparts neither color nor taste."

For a hundred industrial needs, TIDEWATER Red Cypress is the right answer. Write today for full details.

Tidewater RED CYPRESS

The Wood Eternal

FLEISHEL LUMBER CO.

4234 DUNCAN AVE. • ST. LOUIS 10, MO. • NEWSTEAD 2100

Three of the most recent developments in equipment to aid operating conditions—complete details upon request. Murray Pulp Stock Agitators for a thorough and complete agitation of pulp stock in chests, illustrated here in both horizontal and vertical chests. Also, new flow spreader for Fourdrinier paper machines for high efficiency flow, and new fan pump for handling diluted stock going into paper machine screens.

Other paper mill equipment: Pulp wood chippers, multiple knife discs, pulp wood slashers, flat screens, chip crushers, knot saws, knot drills, wood cleaners, roll heading machines, windershafts, unit heaters, blast sections.

D. J. MURRAY MANUFACTURING CO. WAUSAU WISCONSIN

EVERY detail casts its "shadow"—its effect—upon the total. The ensemble cannot be right unless all its components are right. For more than 40 years Lindsay wire cloth has been woven with painstaking care for a myriad of "little things".

THE LINDSAY WIRE WEAVING COMPANY
Serving the Paper Industry Since 1903
14001-14299 ASPINWALL AVE., CLEVELAND 10, O.

Lindsay WIRES
FOR PAPER MILLS

It's much more efficient and economical to use ARCC's scientific, quantitative emulsion facilities than to mix your own.

THE *Why* OF RESIN EMULSIONS IN PAPER PROCESSING AND FINISHING

Compounding possibilities are myriad; this flexibility in economical custom composition assures precisely the wanted results in paper processing.

Applications are myriad, too; startling characteristics of tear and wet strength, grease, water and age resistance — adhesion, heat seal, electrical insulation — may be attained with resin emulsions.

***Specifically* ARCC EMULSIONS**

Distinguished by stability, uniformity, availability and low cost.

Arrangements for assistance from your nearest ARCC laboratory will be made promptly upon receipt of your request. No obligation, of course.

Division of Paper Trade Chemicals.

American Resinous Chemicals Corp.

HOME OFFICES AND LABORATORIES: PEABODY, MASS.
NEWARK, N. J. CHICAGO, ILL. MONROVIA, CALIF.

such close, uniform relationship and pieces or pounds are by no means a measure of effort or application. If a real incentive is desired in such cases it must be based on a more rational measure of effort and contribution than that indicated by pieces or tons produced. Insistence on elementary simplicity, regardless, because of the claim that workers cannot understand anything else has caused considerable wage incentive mortality. The American worker of today, individually and collectively, is a much different man from the uneducated, non-English speaking immigrant of the old days, and he is quite capable of following sound incentive reasoning and its corresponding practical interpretation.

Incentives should promote good utilization of manpower in every direction including skill, quality and service as well as quantity. This means that in addition to promoting good productive use of individual physical capacity, they should also promote skillful use of mental qualifications to secure better utilization of equipment, of materials, of supplies, of space, and increased quality. Whether directed toward greater physical or greater mental productivity, all contribute to low costs and better wages, which are basic requirements in a prosperous peace economy.

Despite their spectacular war record, wage incentives have met with considerable opposition from time to time. Some labor groups, various government officials, even some managements have questioned, even denied, their value or their practicability.

Management's skepticism of former years was largely motivated by the added problems and costs incidental to the installation and administration of incentive plans. And by the practical technical difficulties of installation and administration in industries where the product, the methods and the processes are frequently changing. Also because of a misplaced pride in the mind of some executives, who felt that their own qualifications for leadership did not need any support of that sort. But management now realizes only too well that a very radical change in labor-management relations has taken place. This change is simply that, whereas up to ten years ago a foreman, superintendent or manager, could demand—and insist on getting—a fair day's work from every worker, he no longer can do so. The "boss" can now seldom apply direct pressure to secure a greater contribution. The days of go to work or get out are gone.

This means that any increase in labor's contribution must be essentially voluntary. Good management, good labor policies and practices will contribute favorably toward that objective, but nothing has yet been found to be anywhere near as effective as providing for the workers involved a direct financial incentive whereby they can see and feel for themselves a close relationship between their own contribution and their own pay.

This may not be true with all. Many men will do as much or more through faith, belief, pride and satisfaction. But to a great majority of workers whose day-to-day personal and family welfare, comfort and peace of mind are materially affected by a few more or less dollars per week, incentive pay can be one of the most attractive and most legitimate expressions of recognition for accomplishments. All the more is this so, since management is no longer free to give selective recognition through selective wage increases.

The wartime government attitude toward incentives has been very favorable. Wage stabilization has permitted wage increases resulting from additional incentive pay. As chairman of the special committee investigating The National Defense Program, President Truman repeatedly advocated a more productive use of manpower, materials and facilities, and he specifically advocated the use of incentives as a means of attaining these objectives. It should be noted that Mr. Truman referred not only to war production needs, but also to the future peacetime economy.

The future government attitude, however, may be less favorable, particularly if there should be widespread unemployment. President Roosevelt stated his opposition to incentive wages as late as 1938. Quite possibly the Government attitude will reflect that of organized labor. The "spread the work" philosophy of the early thirties may re-appear. It is even possible that the war endorsement of incentives by the War Production Board, by Army and Navy officials, by the War Labor Board and by many labor and many management groups may be construed to be justified only by war conditions and claimed to be undesirable or unnecessary under a peace economy.

This is more than a possibility, it is a probability against which we should prepare now by promoting a better understanding of the needs for and benefits from wage incentives, and by making sure that all wage incentive application practices are fair, logical and of lasting value. Unless this is done there will be considerable pressure to eliminate wage incentives as such, or to insist on regulations which may nullify the real economic benefits of increased pay for increased contribution while promoting fictitious benefits derived from increased pay without corresponding contribution.

Labor has given many reasons to justify its more or less frequent opposition to the wage incentive idea. The occasional cases of complexity, inequities, unfairness and abuse have been emphasized, but when all is said and done, most of the labor opposition can be traced to three main reasons. The first is that some pre-wage-stabilization wage incentive plans were used as a means of supporting a low level of basic pay. That objection does not exist under present wage stabilization rules, since the guaranteed basic hourly wage now must be within the rate bracket of hourly wages prevailing in the industry in the locality. The feeling that wage incentive may again be used as an argument against future increases in the hourly wage level, however, remains strong in some quarters, and management should always insist on a clear distinction between basic wages and incentive pay.

The second and major reason for labor opposition to wage incentives is the belief that increased productivity, whether the result of wage incentive or anything else, may mean the loss of jobs. Even when other jobs are available elsewhere, lack of clear-cut provisions to take care of workers displaced because of increased productivity, is the most serious limitation in the labor acceptance of wage incentive, or for that matter, of any other means of increased productivity. Already many managements have taken steps to correct that situation and have provided temporary or permanent relief for the workers who may be so displaced. In that classification are provisions for special work, dismissal wages, free employment service and better seasonal planning. The additional costs of these protective measures have been more than made up by the additional results of more ready labor acceptance and co-operation. Management should not depend on the convincing power of the old argument that eventually increased productivity and lower costs will provide additional jobs. The big question in the worker's mind is what will happen to him now, and management must effectively supplement the national relief provisions against unemployment resulting from increased productivity even if the immediate cost is substantial.

ROOFING MACHINERY
MANUFACTURING CO.
Factory and Office
1130 W. Cornelia Ave., Chicago 13, Ill.

Designers and Builders of
Tar and Asphalt Saturators
Laminating Equipment
Embossing Units (brick siding, etc.)
Asphalt Coating Machinery
Looping, Drying and Cooling Systems
Winders for Roll Roofing
Shingle Cutting Machines
Wax and Lacquer Coating Machinery

We also manufacture cutting cylinders, anvil rolls, and squeeze rolls. We make a specially constructed steam jacketed 2" and 3" pump for handling viscous materials such as filled asphalt, heavy lubricating oils, and kindred products.

Pump catalogue upon request.

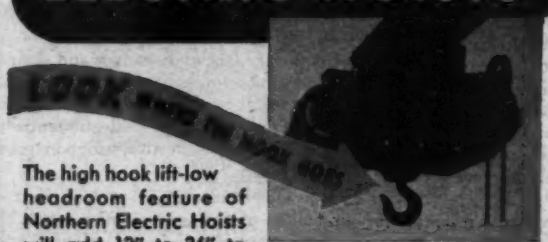
TOILET TISSUE *Makers*

IMPROVED toilet winders, interfolders, core cutters and embossers. Printing presses and sheeters for label printing and wrappers for wrapping. • High production machines, low cost operation and superior product. • Specifications and prices upon application —

HUDSON-SHARP
MACHINE CO • GREEN BAY • WIS

★ ★

LIFT THE LOAD
HIGHER AND *FASTER*
WITH ***Northern*** HIGH-LIFT LOW HEADROOM
ELECTRIC HOISTS



The high hook lift-low headroom feature of Northern Electric Hoists will add 12" to 36" to the working height of your building—without extra expense—without altering the building. This means better use of storage space, easier handling of bulky loads, faster operation because clearances are greater.

Northern Hoists are also superior in strength, lifting power, speed, and handling.

Northern WRITE FOR BOOKLET
ENGINEERING WORKS
2615 Atwater Street, Detroit, Michigan
Offices in Principal Cities
Northern Crane & Hoist Works Limited, Windsor, Canada

BAUER PULPER INSTALLATIONS

Produce long, pliable, free fiber. From many different raw material sources for almost every grade of finished output. The tabulation of actual mill applications below will interest you—give you a clear picture of the range of stocks being successfully pulped with Bauer equipment.

Raw Chips from Logs or from Wood Waste, Slabs, Edgings, Tree Tops, Veneer Waste.

Steamed Chips.
Semi-Chemically Cooked Chips.

Extracted Chestnut Chips.
Extracted Pine Stump Chips.

Groundwood Bull Screen Rejects
Groundwood Knotter Screen Rejects
Groundwood Fine Screen Rejects

Kraft Knotter Rejects
Kraft Screen Rejects

Sulphite Screen Rejects

Waste Printed Papers; Ledgers
Waste Wet Strength Papers
Waste Corrugated Papers
Waste Papers in General

Bagasse Fiber
Licorice Root Fiber
Bamboo Fiber

Stock enters at F, passes between plates PP, positioned between disks A and B . . . and is discharged at E.

THE **BAUER BROS. CO.**
SPRINGFIELD, OHIO

Bauer Pulpers are in service in: The United States, Canada, Mexico, Hawaii, New Zealand, Australia, India, Sweden and Russia.

ARMY E NAVY
Bauer

The third reason is found in the occasional instances of unfair or abusive wage incentive practices.

To resist such possibilities, several labor groups have taken the position that wage incentives, and particularly the establishment of production standards, should be a joint management and labor procedure.

The desirability and dangers of labor participation in the formulation of wage incentive plans and in their application has received much attention and publicity in recent years. Some companies have loudly advertised the benefits of labor participation; others insist that the incentive plan and the determination of production standards therefrom are a responsibility of management, not to be shared with any one else.

While some claims for the success of their joint management-labor-conceived-and-applied incentive plans have been found to be grossly exaggerated, labor participation can be very helpful in securing good results and lasting satisfaction. But this participation must be predicated upon respect for fair basic principles and practices and not be just one more opportunity for power trading designed to secure the most while contributing the least.

It is, of course, unfortunate that some managements, have permitted some abuses and misuses, in connection with wage incentive. Charges of "speed up" have come when increased productivity was obtained under pressure rather than from voluntary contribution due to the attractiveness of the additional incentive pay. Production requirements have been raised under various questionable pretexts. Labor also objects to losing money because management fails to function properly.

In recent years, management has learned a great deal about wage incentives and very generally understands what incentive can and should do and also what incentive cannot or should not do, but even today there is still much that is open to justified criticism. Even among some of the largest employers of labor who have had experience with incentive wages for many years, there are current practices which actually nullify some of the most desirable objectives of wage incentive and undermine their justification. I may mention, for example, those plans which recognize that as long as a man does all he can do on his own job, regardless of circumstances, he is entitled to the maximum incentive pay. The incentive pay opportunities should be proportionate to the opportunity to contribute, for labor can't see the soundness of an incentive system which provides no more money when they are asked to go from a job requiring 30 minutes of actual work on the hour to a job requiring 60 minutes of actual work on the hour. Neither can we.

In a similar order of ideas, wage incentive plans which guarantee a certain minimum incentive pay, regardless, and which limit the maximum incentive pay, regardless, cannot be considered as good incentive plans. Whatever benefits they may give at the time of their inception, they soon become purely and simply a means of paying a certain fixed level of wages for a certain fixed level of production, instead of continuously promoting improvement. Individual ability and willingness vary considerably and if a worker has exceptional ability, he should be given the opportunity to benefit accordingly. On operations controlled by human skill, willingness and capacity, it should be possible for the better workers to earn substantially more than the average. Any arbitrary limit or roof on incentive wages will deny the full productive use of the best workers and discourage all other workers from trying to continuously improve themselves.

The attractiveness of financial incentive should be sufficient to promote reasonable application and effort but not such as to foster extreme speeding up likely to be detrimental to workers' mental and physical health. The desirable range of additional incentive pay is 15% to 35% for the average, depending on whether the workers' possible contribution is limited by process or equipment. This permits the best workers to earn 50% or even more above the regular hourly payscale.

All in all, much is to be done, much can be done, and wage incentives have a sizable place in our industrial set-up. Not only can they contribute effectively to the solution of our economic peacetime problems, but they will keep alive the old but desirable idea that skill, intelligence, willingness and hard work bring a prompt reward.

But to do this successfully, satisfactorily and permanently, incentives must respect fair basic principles, without which their value and life is bound to be limited.

The incentive pay opportunities should be proportional to the opportunity to do actual work and there should be a close relationship between reward and true contribution.

Production standards or norms should be on a fair, reasonable, uniform level independent of past performance. They should not be changed, unless the necessary work requirements are changed. New standards corresponding to changed operations and changed conditions should be on the same level as the old.

Incentive wages should neither be guaranteed nor limited. They should provide for a sufficient, but not excessive, additional pay over and above the hourly rate considered adequate for day work pay.

Incentive pay earned while working must be protected against uncontrollable losses of time, but should not be paid for idle time.

All procedures related to incentive pay should be kept as simple as possible and be thoroughly understood by all concerned.

Management will do well to familiarize itself with those requisites and see that they are respected. The fact that the workers' pay checks are involved is quite important in itself, but the long range psychological reactions are perhaps even more important. Incentives must be what they are supposed to be and not a subterfuge for something else. They must be fair and reasonable to start and they must be kept that way. They must be administered by competent and fair-minded men whose actions cannot be swayed by accidental or temporary circumstances.

Good wage incentives cannot and should not substitute for good basic wages, and neither can they substitute for good management, but they can add substantially to good wages and effectively support good management.

It is for management to lead in the promotion of this contributing means to postwar prosperity and employment. And in showing that jobs and good pay are indissolubly associated with our ability to produce at low cost and, therefore, to sell at prices which, in relation to wages, are low enough to continuously create increased demands. Management has a job to do on that score. Showing that low costs mean more than big profits, and that profits mean jobs as well as dividends. One drawback of victory is that it has never been conducive to hard work. Yet work we must, if we are to provide the necessary jobs and keep on improving our way of living. Good incentives promote and reward good work.

GUARANTEED

POWER EQUIPMENT

A Complete Service in Either Rebuilt or New

REBUILDERS OF . . . A.C. and D.C. Motors, Generators, M-G Sets, Pumps, Control Equipment, Transformers, Switchboards, Alternators.

DISTRIBUTORS OF . . . Rockwood Drives and Bases, Falk Couplings, Modern Motor Drives, General Electric Motors and Control.

CHICAGO ELECTRIC CO.
1318 W. 22nd St. Chicago 8, Ill.
Phone Canal 2900

Kalamazoo GLAZED TILE

—the finest material for Paper Mill needs

Hundreds of paper mill executives and engineers know that Kalamazoo Tile construction costs less—lasts longer—controls stock better—requires less maintenance—and is more flexible as to size or design in meeting production layouts.

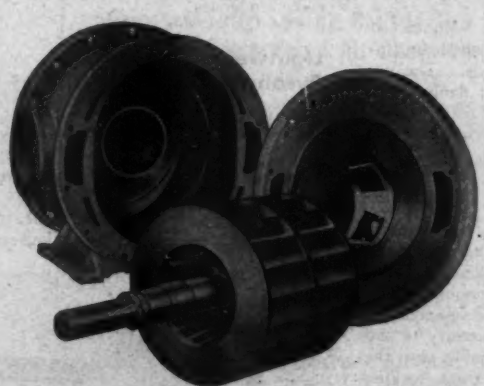
No other material equals the smooth, hard surface that is impervious to most chemicals—flushes clean—does not flake, pit or scale—and is free from friction.

Should fins—midfeathers—agitators—round—square or tapered ends, corners and bottoms be needed—the exclusive Kalamazoo method makes it easy to construct and moderate in cost, usually less than reinforced concrete.

ASK for ENGINEERING DATA

Kalamazoo TANK & SILO CO
KALAMAZOO - MICHIGAN

SIMPLICITY



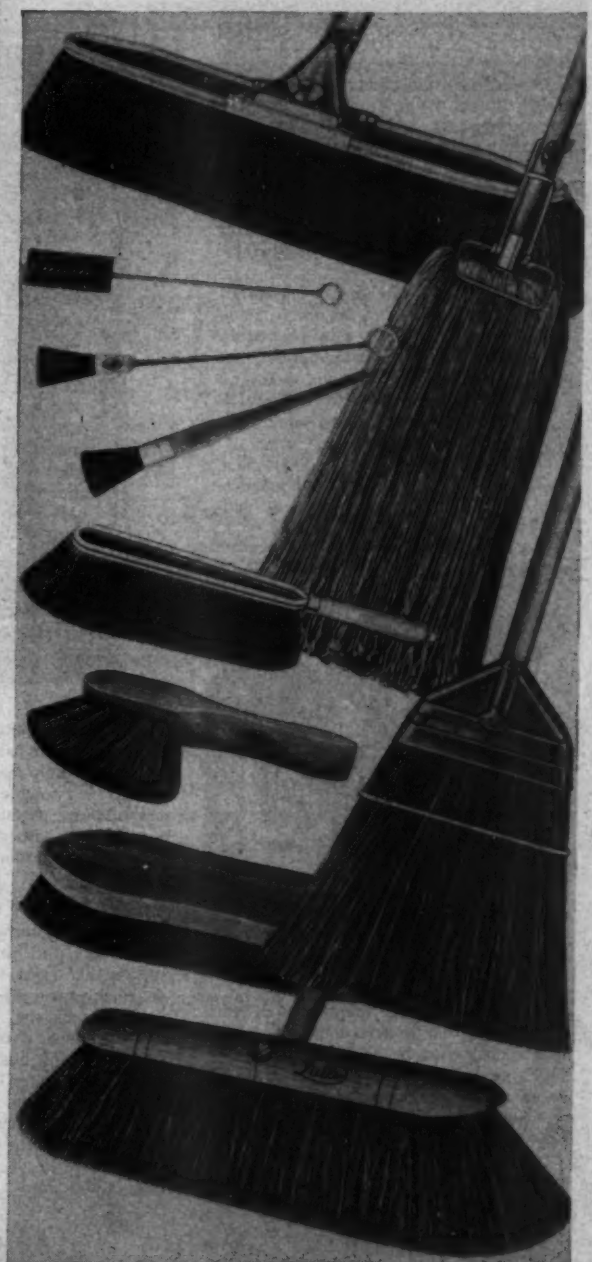
NASH VACUUM PUMPS HAVE ONE MOVING PART

Operating advantages made possible by the Nash principle, and present in no other type of vacuum pump, permit a new level of operating economy. Nash Vacuum Pumps have but one moving part, a rotor cast in one piece, and revolving without metallic contact. There are no valves, no pistons or sliding vanes, no internal parts requiring wear adjustment or lubrication.

NASH ENGINEERING COMPANY
SOUTH NORWALK, CONNECTICUT, U. S. A.

Famous Fuller Brushes for the PAPER INDUSTRY

These efficient cleaning tools are designed to meet the needs of your plant. Each Fuller product represents the best in materials and workmanship.



Our catalog illustrates our full line. Send for free copy to Department 74.

THE FULLER BRUSH COMPANY
INDUSTRIAL DIVISION · HARTFORD 2, CONN.

NEW EQUIPMENT AND SUPPLIES

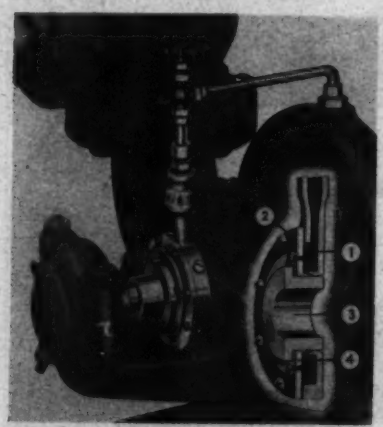
Shaft Seal for Horizontal Centrifugal Pumps

A heat-resistant and non-corrosive seal for the shafts of horizontal centrifugal pumps has been announced by Jet Shaft Seals, Inc., 1452 S. San Pedro St., Los Angeles 15, Calif.

The seal, in principle, draws pressure from the high point and directs it back into the low pressure area of pump with sufficient force to seal off internal pressure. The liquid flows through liquid box (1) inward past the orifice plate (2) and back into the pump. Shaft sleeve (3) turns with the shaft, but is not in contact with the orifice plate, so there is no point of wear.

Diaphragm (4) provides a leak-proof seal while pump is not in operation, being pressed outward by the pressure within the pump against the shoulder of the shaft sleeves. The diaphragm makes no contact with the shoulder while pump is turning, except momentarily when the pump is starting or stopping.

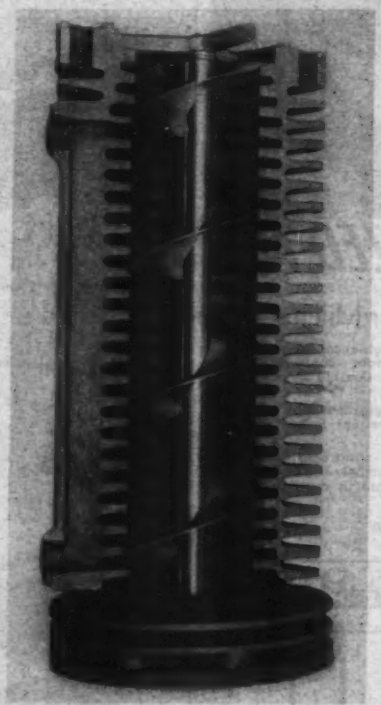
The seal, known as the *Jet Shaft Seal*, is available in both bronze and stainless steel and in sizes for all pumps with shafts one inch or over in diameter.



According to the manufacturer, this seal saves a large percentage of pump maintenance costs by eliminating waste of fluid, packing expense and the causes of sleeve and shaft wear; provides greater continuity of pump services; and reduces power input by ending packing drag.

Temperature Exchanger For Air and Gas Lines

The Bird-White Company, 3119 West Lake Street, Chicago 12, Ill., has announced the development of a temperature exchanger for air and gas lines. The exchanger features a multiple action helicoid flighting. This flighting is revolved at high speeds by the velocity of the air or gas under pressure, and, in so doing, forces the air or gas outward against internal cooling fins. These fins absorb the heat generated in compression and dissipate it to the outside atmosphere through external cooling fins. In this manner, the temperature of the air or gas passing through the exchanger is lowered to room temperature.



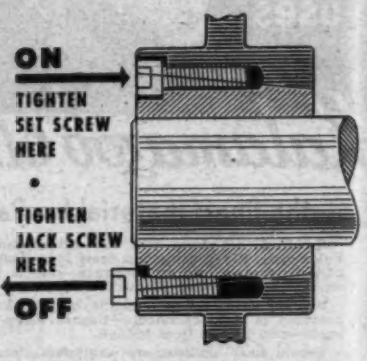
For accommodating large volumes of air or gas, either parallel assemblies or tandem installation may be made. The exchanger is available for both flanged and screwed-type assemblies. It may also be provided for either manual or automatic draining of the sump.

V-Belt Sheave

Dodge Manufacturing Corporation, Mishawaka, Ind., has announced a V-belt sheave that represents an effective means of quickly mounting and demounting.

To install the sheave, designated as the *Taperlock*, it is only necessary to slip the sheave and bushing assembly onto the shaft and tighten two or three locking screws depending upon the size of the sheave. The screws are in threaded engagement with the sheave hub and free in the bushing groove. As the screws are tightened, they push against the tapered bushing forcing it into the tapered bored hub. This causes the bushing to contract and wedge between the hub and shaft on which it is installed.

To removed the sheave from the shaft, the locking screws are removed and one or two of them are inserted in jack screw



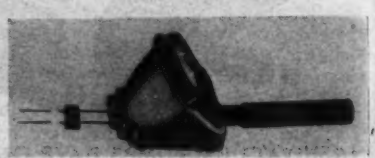
holes which are partially in the bushing and partially in the hub. The portion of the jack screw hole in the bushing is threaded and that in the hub portion is unthreaded. As the screws are tightened, the bushing is dewedged and the sheave is free for removal from the shaft.

According to the manufacturer, the wedging action provided in this sheave gives the equivalent of a shrunk-on fit on the shaft whether it is standard or normally undersize.

Lightweight Portable Pyrometer

A portable pyrometer, weighing only 1¾ pounds, has been announced by the Instrument Division of the K. H. Huppert Company, 6830 Cottage Grove Avenue, Chicago, Illinois.

Body design elevates the scale to an angle that offers maximum reading ease in



all working positions, and lessens the danger of scale glass coming in contact with other objects when instrument is placed in resting position.

Instrument movement provides accuracy of reading to 2% of scale range. Duo scale is standard with readings of: 0 to 500 Fahr. and 0 to 1000 Fahr., 0 to 750 Fahr. and 0 to 1500 Fahr., or 0 to 1000 Fahr. and 0 to 2000 Fahr., or equivalent in Centigrade. Other scales are available on request. Manual room temperature adjustment can be made by the zero adjustment screw on the face of the meter.

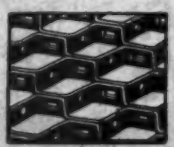
There also is a six inch handle which permits a firm, comfortable grip.

"This is a KLEMP HEXTEEL Floor—

and it has been as solid and level as that for years!"

For safety of men — protection of machines — end your floor hazards!

KLEMP HEXTEEL does it!



Heavy Duty Floor Armor

Hexteel, heavy steel grid is easily laid over old or new floors of any material. Fill Hexteel even with top of mesh, with concrete or mastic, and you have a solid level floor for longest, severest service. Exposed steel bearing surface. Lowest maintenance cost.

Send for Complete Catalog.

Also shows Klemp-Acme Floorsteel, the floor armor for lasting floors—Open Steel Gratings—Steel Stair Treads, etc. Latest information.

WM. F. KLEMP COMPANY

"Steel Flooring Specialists"

6604 S. Melvina Ave. Chicago 38, Illinois

Here's Money-Saving Protection For Your Compressed Air Operated Machinery and Instruments

Now, regardless of volumes required or fluctuating pressures, the new Bird-White Pur-O-fiers completely and effectively remove all moisture, oil, dirt and other foreign matter from compressed air or gas lines—preventing costly corrosion and gumming in compressed air-operated machinery and instruments.

Operating on the principle of centrifugal action, a high speed Turbo-rotor forces the tiny particles of foreign matter outward where they are trapped and drained off.

Single units can accommodate up to 100 cubic feet. Above this range multiple units are recommended.

New applications for Bird-White Pur-O-fiers are being developed every day. Write for Bulletin No. 10 giving complete information.

BIRD-WHITE COMPANY
Dept. PI, 3119 W. Lake Street
Chicago 12, Illinois

...PATENTED

WHAT DOES YOUR GRINDING ROOM NEED MOST--

More working space?

A faster, simpler method?

Greater accuracy in knife edges?

the NEW AK Offers ALL THREE!

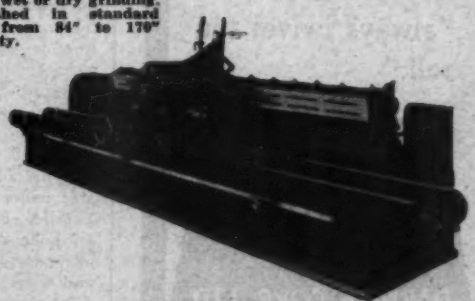
MORE SPACE—And here's another big advantage of the Traveling Wheel AK—it takes only half the installation space required for a standard traveling table grinder of the same capacity! That means you can sharpen even your largest knives in your own mill without sacrificing floor-space.

FASTER, SIMPLER—Your knife and shear blade sharpening becomes a simple one-man operation when a Hanchett AK Knife Grinder takes over! Completely automatic controls assure you a precision job in a matter of moments—with no skilled operator required.

GREATER ACCURACY—The AK Knife Grinder is a modern, precision machine in every detail . . . massive, full cabinet base . . . built-in grinding head motor of special construction . . . forced feed lubrication . . . belt covered ways . . . compact, convenient control panel.

Get more information about the AK today. Write the pioneers in the industry for your copy of Bulletin 178-11, and include details of your own knife grinding problems. They'll be glad to assist you, with no obligation on your part.

The AK is equipped for either wet or dry grinding. Furnished in standard sizes from 84" to 170" capacity.



HANCHETT MANUFACTURING CO.
BIG RAPIDS, MICHIGAN, U.S.A.

Darnell Casters
& E-Z ROLL WHEELS

SAVE MONEY

Reduce floor and equipment wear to a minimum — increase employe efficiency with the casters that "always swivel and roll."

FREE Manual

DARNELL CORP LTD
LONG BEACH 4 CALIFORNIA
60 WALKER ST NEW YORK 13 N Y
35 N CLINTON CHICAGO 6 ILL

Marker for Cases, Cartons, Bales, Etc.

A marker for imprinting information on cases, cartons, bales, etc., constructed of steel, and with rubber imprint surface mounted to base, has been announced by Adolph Gottscho, Inc., 190 Duane St., New York 13, N. Y. Designated as the *Rockamarker*, the unit has a curved imprint surface which permits it to be rocked over a pad to ink the dies and also over

the surface to be marked for making an impression. The rubber imprint surface may be composed of dies either permanently mounted, or interchangeable, or a combination of both.

The unit is equipped with either one or two handles depending upon size. Sizes larger than nine or ten inches have two handles; smaller, one handle. Inks are available for permanent waterproof impressions on wood, corrugated fiber, or metal surfaces.

Arc Welding Electrodes

Allis-Chalmers Mfg. Co., Milwaukee, Wisconsin, has announced A-C Nickel Manganese, A-C Mo Mang Manganese, X2, and X3 electrodes as additions to its arc welding electrode line.

A-C Nickel Manganese and A-C Mo Mang Manganese are available in assorted sizes, both bare and coated, the coating being a combination suitable for both A-C and D-C welders. X2 and X3 electrodes are available in assorted sizes and combination coating only.

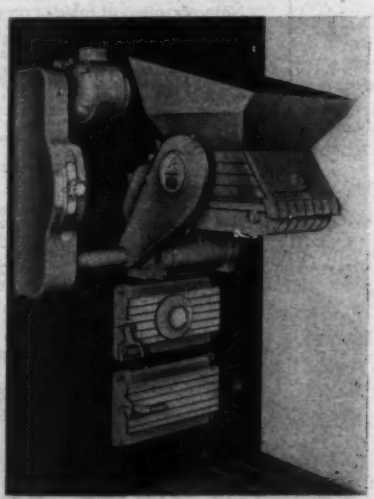
Liquid Belt Dressing

Graton & Knight Co., Worcester 4, Mass., has announced the development of a new Grako liquid belt dressing for application to leather belts. According to the announcement, repeated tests with the formula show an improvement of 15-20 per cent increase in transmission from rating upwards, with a greater percentage rise for belts which are pulling under their rating. An instantaneous power rise is claimed for the dressing.

Other advantages cited for the dressing are: pours readily at freezing temperature (32 deg. Fahr); will not cake or gum up on pulleys and belts; and is particularly adaptable for conditions where steam and water are bothersome.

Spreader-Type Stoker

American Engineering Company, Philadelphia 25, Pa., has announced a new spreader-type stoker. Designated as the AE Perfect Spread Stoker, this unit can be installed under most existing boilers to produce steam from 175 hp. to 200,000 lb. per hr. According to the manufacturer, it is completely automatic and efficiently burns all kinds and grades of solid fuels, including by-products and plant refuse, whether wet or dry.



Other advantages cited by the manufacturer follow: fully protected mechanism, accessible without tools; simple controls; water cooling, and long-life grates with power dump.

RODNEY HUNT
ROLLS
STRONGER
LONGER LIFE
WOOD
METAL
RUBBER
PLASTIC
PATENTED
"SHAF-TITE"
CONSTRUCTION
RODNEY HUNT
MACHINE COMPANY
38 Maple Street, Orange, Mass., U.S.A.

HERMANN CLAFLIN REFINER
FOR
STOCK PREPARATION

•

The several combinations of fillings obtainable with various knife widths and materials and special hydrating filling makes it possible to cover a wide range.

•

Continuous and batch beating systems.

•

High strengths developed at high freeness.

•

Replaces brushing jordans where cutting is not a requisite, with substantial power saving.

•

Also manufacturers of pulp testing and sheet making apparatus. TAPPI standard.

•

THE HERMANN MANUFACTURING CO.
Lancaster, Ohio

Take A Look . . .

8 Publications for the Papermaker

Modern Pulp and Paper Making $6.75
C. B. Witham, Sr.
Second Edition, Revised and Enlarged. A book of 704 pages, written for machine tenders, beater men and other practical mill workers, as well as for engineers, technologists and executives.

Trouble on the Paper Machine ..... .75
Archie McCaffery
A monograph—published in convenient pocket-sized edition. Bulk rates, in groups of ten or more, 50 cents per copy.

Pulp Bleaching (A Symposium) ..... .50

Technology of Papermaking Fibers ..... .50

Lessons in Paper Making—Part 1 ..... .50
Harry Williamson

Lessons in Paper Making—Part 2 ..... .50
Harry Williamson

Drying of Paper on the Machine (Second edition) 1.50
B. M. Baxter

Procedure Handbook of Arc Welding Design and Practice 1.50
Seventh Edition—latest information on all phases of arc welding—1308 pages—1610 illustrations. Standard text in hundreds of schools and colleges. ($2.00 outside U.S.)

Now available, postpaid from

FRITZ PUBLICATIONS, INC.
59 E. Van Buren St., CHICAGO 5, ILL.

For FIBER BOARD

MAPICO Reds

Several standard shades permit a variety of rich deep reds and pleasing tints ranging through orchid, coral and pink.

Good fiber adhesion, permanent color (light, acid and alkali resistant), high tinting strength and uniformity have made these fine precipitated iron oxides much sought after by paper manufacturers.

Look to MAPICO for Leadership

MAPICO Colors

PURE OXIDES OF IRON

YELLOWS · REDS · BROWNS · BLACK

COLUMBIAN COLLOIDS

We will gladly send samples and complete technical data.

COLUMBIAN CARBON COMPANY
MAGNETIC PIGMENT DIVISION
MANUFACTURER

BINNEY & SMITH CO., *Distributor*
41 EAST 42nd STREET - NEW YORK 17, N. Y.

Dependable Water Supply For America's Railroads

Water is of tremendous importance to railroads! A shortage—or failure of water supply can play havoc with schedules. Maintenance engineers on practically all of America's major railroads have long insisted on—and use Layne Well Water Systems. These experienced men can—and do place absolute confidence in Wells and Pumps built by Layne. No other kind has yet won their full approval.

The reason of such broad and overall preference is almost too obvious to mention. In advanced engineering design alone, Layne Well Water Systems are far ahead of competitive makes. But it is the genuine rugged quality and long trouble free life of Layne water producing equipment that wins and holds the grateful thanks of all owners.

Layne Well Water Systems are serving all types of industry—thousands of cities, irrigation projects and the world's largest mines—not only the United States, but in practically every foreign country on the globe.

Right now, Layne is back on full time service for civilian needs. If you need a modern and highly efficient water system, write or wire for further facts. For literature, address, Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

HIGHEST EFFICIENCY

Layne Vertical Turbine Pumps are now available in sizes to produce from 40 to 16,000 gallons of water per minute. Their high efficiency saves hundreds of dollars on power cost per year.

AFFILIATED COMPANIES: Layne-Arkansas Co., Stuttgart, Ark. * Layne-Atlantic Co., Norfolk, Va. * Layne-Central Co., Memphis, Tenn. * Layne-Northern Co., Mishawaka, Ind. * Layne-Louisiana Co., Lake Charles, La. * Louisiana Well Co., Monroe, La. * Layne-New York Co., New York City * Layne-Northwest Co., Milwaukee, Wis. * Layne-Ohio Co., Columbus, Ohio * Layne-Texas Co., Houston, Texas * Layne-Western Co., Kansas City, Mo. * Layne-Western Co. of Minnesota, Minneapolis, Minn. * International Water Supply Ltd., London, Ontario, Canada * Layne-Hispano Americana, S. A., Mexico, D. F.

LAYNE

WELL WATER SYSTEMS
VERTICAL TURBINE PUMPS

New Catalogues and Publications

American Air Filter Company, Inc., Central Avenue, Louisville 8, Ky.—An attractive booklet, "The Magic of Electronics in Air Filtration," has been published by this company. Starting with the early history of electronics, it gives the theory and practice of electronics, as used in air filters; the story of AAF research and development in electronic air filtration, and describes various types of filters, as well as their applications to various industries. The booklet includes an isometric drawing of an air conditioning system, showing the location of an AAF electronic air filter.

Aero-Seal Rubber Products, (Div. Chicago Belting Company) 113 North Green Street, Chicago 7, Ill.—Just published by this company is a 32-page, primer style picture book, "Mechanical Molded Parts of Synthetic Rubber." It is designed as a guide to show engineering departments the best way to develop and secure successful parts molded from synthetic rubber. It gives typical development procedures worked out during the war, and lists the 14 laboratory controls used. Detailed information about molds and trimming fixtures that are peculiar to synthetic rubber parts are included. The booklet shows how specifications are arrived at, gives pictures and brief descriptions of raw materials and the four principal manufacturing steps — compounding, molding, extruding, calendering and inspection. It is fully illustrated and there are 14 pages of pictures of typical parts. The booklet will be sent free on request made on company letterhead, until the limited edition is exhausted.

The Bureau of National Affairs, 24th and N Streets, N. W., Washington, D. C. —Announcement is made of the issuance of the first and only complete and continuing reference file of collective bargaining data, known as "Collective Bargaining Negotiations and Contracts." It contains the full text of 30 actual agreements now in effect in various major industries and will be supplemented regularly with texts of new contracts embodying principles arrived at in the reconversion period. A useful factor in this new service is a Contract Clause Finder, kept in one loose-leaf volume. The service is kept in two compact indexed volumes. New Material will be added periodically as new conditions develop.

Clark Tructractor, Division, Clark Equipment Company, Battle Creek, Mich.—A new booklet, "Clark Carloader Method," available on request, approaches the subject of modern mechanized material handling analytically, from the points of view of top management, purchasing agent, production engineers, sales managers and transportation executives.

Electric Machinery Mfg. Company, Minneapolis 13, Minn.—Now available from this company are two new four-page folders covering its A-C synchronous generators. In Publication No. 177 are described 3.75-4.38 kva generators and in Publication No. 179, 250-500 kva generators.

Flexrock Company, Filbert and Cuthbert, Philadelphia 4, Pa.—Two pamphlets on its products have been issued by this company. The one on roofing not only describes "Rooflex" made by the Flexrock Company, but also contains valuable information on various types of roofing, and their installation. It may be had by writing to the com-

READY FOR ph DETERMINATION

PLUG INTO ANY 110 VOLT A.C. OUTLET

The Cambridge pH meter is always "ready-to-go". It may be turned on continuously during the day so that it is available for pH measurements immediately without waiting through a warming-up period to obtain stability. Another feature of the *Cambridge* is the Electron-Ray Null Indicator. It permits quick, hairline adjustment and cannot be injured by hasty, inexperienced mis-manipulation.

Available in Laboratory and Industrial Models.

Send for Bulletin 910E

CAMBRIDGE INSTRUMENT CO., INC.
3732 Grand Central Terminal, New York 17, N. Y.

THE WATERBURY FELT CO.

The Trade-Mark of
The World's Finest Felts

SKANEATELES FALLS
NEW YORK

"NON-USERS ARE THE LOSERS"

PROFIT PRODUCERS

TENAX FELTS

TECHNICALLY SPEAKING—

TENAX FELTS are unexcelled in performance. For all types of paper and board, they start right, run smoothly, provide full and true trim with the proper water removal.

Financially speaking TENAX FELTS assure that wider margin of profit which is so important in times of rising costs.

"Non-Users Are the Losers"

LOCKPORT FELT COMPANY

NEWFANE, NEW YORK

CHEMIPULP PROCESS INC.

CHEMICAL PULP MILL ENGINEERS

500 Woolworth Building, Watertown, N. Y.
3311 First Avenue South, Seattle, Wash.
Associated with CHEMIPULP PROCESS LIMITED, Montreal, Que.

Read . . .

THE PAPER INDUSTRY AND PAPER WORLD
for
Constructive Articles—Selected News—Features

COLORS . . .
for Board and Paper

Green Chromium Oxides
Black, Brown, Red, Yellow Iron Oxides
Lamp Black—Umbers—Venetian Reds—Yellow Ochres

C. K. WILLIAMS & CO.
Easton, Pennsylvania

ENGLISH ECCO CLAYS TRADE MARK **CLAYS**

UNIFORM • SUPERIOR • DEPENDABLE

English China Clays Sales Corporation
551 Fifth Avenue, New York City

THE

SMITH & WINCHESTER MFG. CO.

THE CONFLICT IS NOT OVER... UNTIL "PEACE" AMONG ALL NATIONS IS ACHIEVED.

HOWEVER . . . WITH VICTORY ACCLAIMED

AGAIN WE ARE PREPARED TO DEVOTE OUR ENGINEERING AND MANUFACTURING FACILITIES TO THE RECONDITIONING OR REBUILDING OF YOUR PAPER MILL EQUIPMENT.

AS RAPIDLY AS CONTROLLED MATERIALS AND SKILLED LABOR ARE AVAILABLE WE WILL GIVE PROMPT ATTENTION TO YOUR INQUIRIES AND ORDERS.

CONTINUOUSLY WE HAVE SERVED

THE PAPER INDUSTRY

SINCE 1828

WITH

PAPER MILL MACHINERY

EFFICIENT IN QUALITY AND WORKMANSHIP

PAPER BAG MACHINERY
"Rainstorm" Shower Pipes
Stuff Pumps—Jordans
The New Model "E" Trimmer

—Office and Plant—
South Windham, Conn.

pany. The other pamphlet, entitled, "The Universal Gasket," describes its new "Plastic-Gasket." Requests for this latter circular should be addressed to the attention of the Packing Department, Flexrock Company, Filbert and Cuthbert, Philadelphia 4, Pa.

Minnesota Mining and Manufacturing Company, Saint Paul 6, Minn.—Now available from the advertising department of this company is a new 12-page booklet, "3-M Adhesives in Industry," which will be of interest and helpful to users of adhesives, sealers, coating or insulating compounds, impregnators and sound-deadeners. The bulletin illustrates and describes adhesive operations in many different industries, methods of application and a listing of physical properties. It lists formulas and shows the viscosity, bonding range, color, weight, characteristics and uses and Government specifications. Also included is an adhesive project sheet for the analysis of adhesive problems.

Books

The Social Impact of Science: A Select Bibliography—This 60-page pamphlet is a compilation of the Library of Congress. It lists more than 500 titles of books, pamphlets, articles and Congressional bills and reports dealing with the impact of science on society. A special section covers literature on atomic power, including several volumes yet in press.

The period covered in the list is roughly that from 1930 to 1945. The references are chiefly works in English, but a few German titles have been included.

The pamphlet, printed by the United States Government Printing Office, Washington, D. C., for the use of the Committee on Military Affairs, is further designated as Senate Subcommittee Monograph No. 3 (79th Congress, 1st Session).

How to Handle Collective Bargaining Negotiations—This report, checked by a panel of labor relations experts and edited by the staff of the Executives Labor Letter of the National Foremen's Institute, Inc., is presented in eighteen sections; namely, Why Good Bargaining is Essential; Management Negotiations; Preparing for Negotiations; Wage Data and Counter Proposal; The Counter Proposal; The First Meeting; The Second Meeting; Resolving Contested Issues; Promotion and Merit Increases; Seniority; Unionization of Foremen; The Closed Shop; Clarity of the Agreement; Getting the Contract Across; Conditioning the Union; Union Activity Clauses; Preferred Status for Union Officials; and Looking Ahead. Multigraphed on 8½ by 11-in. paper, the report proper totaling 38 pages, bound in Mult-O binder, the manual is priced at $5.00 a copy. National Foremen's Institute, Inc., Deep River, Connecticut, is the publisher.

Practical Techniques in Sales Selection and Training—Publication of the American Management Association, 330 West 42nd Street, New York 18, N. Y., this 44-page pamphlet brings together several papers that were presented at the Marketing Conference of the American Management Association (January 3-4-5, 1945). The papers and respective authors are: Reorienting the Returning Veteran to Sales Work, William C. Menninger; An Appraisal of Psychological Testing in Salesman Selection, Forrest H. Kirkpatrick; and The Selection and Development of Sales Supervisors, R. F. Lovett. In addition, a panel session on Building the Sales Training Program is reported. The price of the publication is 75 cents a copy.

We offer safe, economical solutions to all pulp and paper mill drainage problems with our twill weave, plain weave, sewed seam, and soldered seam wires.

International Wire Works

Menasha, Wisconsin

GRUENDLER CRAFTSMANSHIP
Serving Industry over 50 Years

For a Better Refined PULP

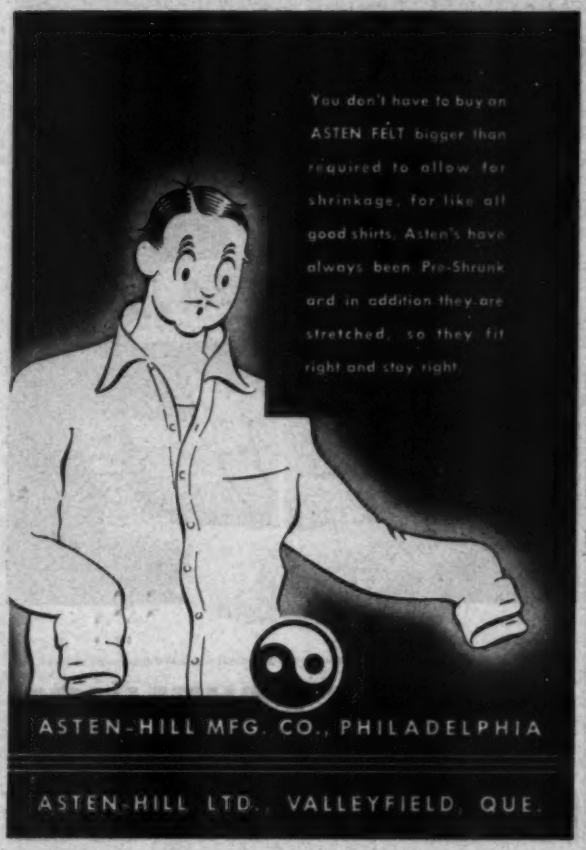
GRUENDLER "TURBO" REFINER

Saves on power up to 50%

Let us send you our Laboratory Reports and Bulletin

Actually Separates, Hydrates, and Combs Fibres—No disintegration and shortening of Fibres with this new method. Builders of WOOD-HOGS, STRAW and WASTE PAPER SHREDDERS

GRUENDLER
CRUSHER and PULVERIZER CO.
2915-17 North Market St. ST. LOUIS 6, MO.


You don't have to buy an ASTEN FELT bigger than required to allow for shrinkage, for like all good shirts, Asten's have always been Pre-Shrunk and in addition they are stretched, so they fit right and stay right.
ASTEN-HILL MFG. CO., PHILADELPHIA
ASTEN-HILL LTD., VALLEYFIELD, QUE.

RYERSON STEEL

IN STOCK FOR PROMPT SHIPMENT—
JUST CALL YOUR NEARBY RYERSON PLANT

Partial List of Ryerson Products:

Alloy Steels	Stainless	Threaded Rods
Bars—Shapes	Boiler Fittings	Rivets—Nuts
Structurals	Reinforcing	Chain—Wire
Rolls—Plates	Floor Plates	Tubing
Sheets—Strip	Tool Steel	
Shafting—Bolts		

RYERTEX NON-METALLIC BEARINGS

Water, Oil or Grease lubricated. These bearings wear longer; reduce power consumption; save vital war metals. Use Ryertex for: Jordans, Beaters, Press and Couch Rolls, Grinders, Calenders, etc.

JOSEPH T. RYERSON & SON, INC.

CHICAGO • MILWAUKEE • ST. LOUIS • DETROIT • CLEVELAND • BUFFALO
BOSTON • CINCINNATI • PHILADELPHIA • JERSEY CITY

Help your workers to work SAFELY!

Your chief concern about accidents in your company is the suffering they cause your employees and their families.

It's hard to say just how many accidents your company will avoid as the result of a systematized safety effort. This much is certain, however: if you apply the accident-prevention materials and services of the National Safety Council, there will be no question about your saving some of your employees and their families (and your company as well) a lot of grief, unhappiness and misfortune.

Your good safety efforts help protect your workers and your company against working hazards. Thousands of industrial organizations have reduced their accidents 30% to 40% through the adoption of the prescribed, time-tested, result-getting ACCIDENT PREVENTION SERVICE offered by the National Safety Council. A sound Safety Program is a valuable investment for your company . . . invest in Safety NOW!

For Further Information Write:

NATIONAL SAFETY COUNCIL

20 N. Wacker Drive — Chicago 6, Illinois

PAPER and PULP SECTION

To make Council Membership of maximum service, safety administrators of member companies are enrolled in the Industrial Section where their chief interests lie. Safety directors whose companies are engaged in similar operations thus pool their knowledge and experience.

Sectional news letters afford a medium for presenting and exchanging information on specific industrial safety problems and ideas on specific hazards. Section members also cooperate in preparing Safe Practices Pamphlets, Data Sheets, Instruction Cards, etc. The Paper and Pulp Section is extremely active in all Council activities.

UNIVERSAL SAFETY

FOR high quality

Specify SOLVAY

TRADE MARK REG. U. S. PAT. OFF.

LIQUID CHLORINE

Exacting production methods have placed Solvay Liquid Chlorine in the fore as the standard of quality. Three Solvay Chlorine manufacturing centers—Syracuse, New York; Hopewell, Virginia; and Baton Rouge, Louisiana—insure simplified shipments and handling and faster deliveries of Solvay Liquid Chlorine.

If you have a chlorine problem consult the Solvay Technical Service—skilled technicians and chemists with years of practical experience and knowledge are prepared to give you expert assistance.

SOLVAY SALES CORPORATION

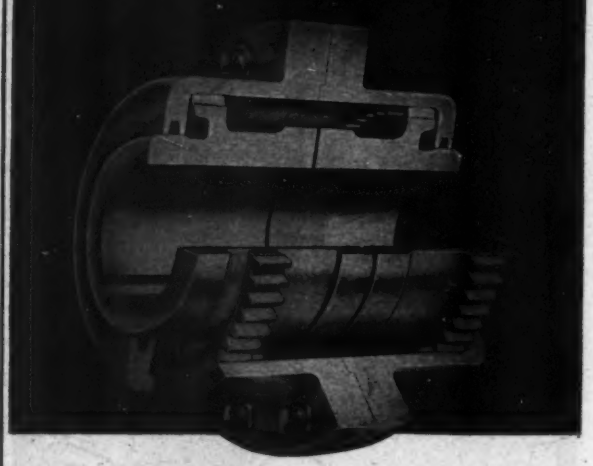
Alkalies and Chemical Products Manufactured by The Solvay Process Company

40 RECTOR STREET NEW YORK 6, N. Y.

BRANCH SALES OFFICES:

Boston • Charlotte • Chicago • Cincinnati • Cleveland • Detroit • New Orleans • New York • Philadelphia • Pittsburgh • St. Louis • Syracuse

POOLE



A COPY OF CATALOG GIVING FULL DESCRIPTION AND ENGINEERING DATA SENT UPON REQUEST.

FLEXIBLE COUPLINGS

POOLE FOUNDRY & MACHINE COMPANY WOODBERRY, BALTIMORE, MD.

CONFIDENTIAL
EMPLOYMENT SERVICE
FOR PAPER AND PULP MILLS
WE INVITE CORRESPONDENCE (Confidential) WITH EMPLOYERS SEEKING EXECUTIVES AND EXECUTIVES SEEKING NEW POSITIONS,
CHARLES P. RAYMOND SERVICE, INC.
PAPER MILL DEPARTMENT
294 WASHINGTON STREET BOSTON 8, MASS.

WANTED—Two paper mill engineers and two draftsmen experienced modern paper mill practice, also two mechanical draftsmen. Permanent work for good men. Address Box 391, Fritz Publications, Inc.

WANTED—Sales engineer, by well-known industrial instrument manufacturer. Must be graduate engineer, experience in processes requiring recording and controlling instruments preferred. Would like men between ages of 25 and 35 who are willing to travel. Box 392a, Fritz Publications, Inc.

WANTED—40-inch sheet cutter for asbestos paper; cuts ranging from 5 inches to 72 inches. Give price, make, model, location and condition. Address Acme Asbestos Covering & Flooring Co., 218 N. Elizabeth St., Chicago 7, Ill.

WANTED—Tour bosses for roofing felt mills located in New Orleans and Metropolitan New York area. Send complete resumes giving experience, etc., to Box 393, Fritz Publications, Inc.

WANTED—Wisconsin paper mill has opening for a graduate electrical engineer, age 25 to 35, with some experience in industrial motor and control applications and maintenance, electrical distribution and industrial electronic applications. Power plant experience helpful. All replies confidential. State experience record and outline qualifications. Address Box 394, Fritz Publications, Inc.

Index to Advertisers

When writing them, please mention The Paper Industry and Paper World

Refer to the Paper and Pulp Mill Catalogue and Engineering Handbook at your mill office, for complete listing of all advertisers' products.

Allis-Chalmers Mfg. Co. 1060-1061
American Car & Foundry Co. 1007
American Chain & Cable Co. .....
American Cyanamid & Chemical Corp. 1001
American Lumber & Treating Co. 1101
American Resinous Chemicals Corp. .. 1107
Appleton Machine Co., The .....
Appleton Wire Works, Inc. 1069
Appleton Woolen Mills 1052
Armour and Company .....
Armstrong Machine Works .....
Asten-Hill Mfg. Co. 1119
Atkins and Company, E. C. .....
Aurand Mfg. & Equipment Co. 1097
Aurora Pump Company .....
Automatic Transportation Co. .....

Bagley & Sewall Co., The 1021
Bailey Meter Company .....
Baldwin-Duckworth Div. of Chain Belt Company 1083
Bauer Bros. Co., The 1109
Beloit Iron Works 973
Binney & Smith Co. 1115
Bird Machine Company .....
Bird-White Company 1113
Black-Clawson Co., The 997
Blackmer Pump Company 1086
Boston Woven Hose & Rubber Co. ....
Bowser, Incorporated .....
Bowsher Co., The N. P. 1086
Brown Instrument Co., The 1089
Buffalo Forge Company 978
Buffalo Pumps, Inc. .....

Calco Chemical Division, American Cyanamid Company 1067
Cambridge Instrument Co. 1116
Cameron Machine Co. 1088
Camp Manufacturing Co., Inc. .....
Carthage Machine Co. .....
Cash Company, A. W. 1022
Chain Belt Company 1083
Chemipulp Process, Inc. 1117
Chesapeake & Ohio Lines .....
Chicago Bridge & Iron Co. 1011
Chicago Electric Company 1110
Chromium Corp. of America 986
Clark Tructractor Division of Clark Equipment Company .....
Classified Advertising 1120
Clayton Manufacturing Co. .....
Cleveland Tramrail Div., The Cleveland Crane & Engineering Co. ....
Cochrane Corporation .....
Columbia Chemical Division 1072-1073
Columbian Carbon Company .....
Cooper Alloy Foundry Co., The .....
Corning Glass Works .....
Crane Co. 1077

Darnell Corporation, Ltd. 1114
De Laval Steam Turbine Co. 1085
DeZurik Shower Company .....
Diamond Alkali Company 1004
Dilts Machine Works 997
Dow Chemical Co., The 1063
Downingtown Mfg. Co. ..... 4th Cover
Draper Brothers Company 1081
Dresser Industries, Inc. 1010
du Pont de Nemours & Co., E. I. 1041
Duriron Co., Inc., The .....

Eastern Stainless Steel Corp. 1005-1006
Eastwood-Nealley Corporation 1098
Ecusta Paper Corporation 1105
Electric Machinery Mfg. Co. .....
Electro-Coatings, Inc. 1088
Elwell-Parker Electric Co., The 1074
English China Clays Sales Corp. 1117
Enterprise Engine & Foundry Co. 1045

Fairbanks Company, The 1057
Fairbanks, Morse & Co. 1075
Falk Corporation, The .....
Falls Chemical Products Co. .....
Ferguson & Co., Hardy S. 1086
Fitchburg Screen Plate Co., Inc. .....
Fleishel Lumber Company 1106
Flexible Steel Lacing Co. 1099
Flexo Supply Company, Inc. 1101
Flori Pipe Company 981
Foxboro Company, The .....
Frederick Iron & Steel Co. .....
Fritz Publications, Inc. 1115, 1122
Fuller Brush Company, The 1111

Garlock Packing Co., The .....
Gates Rubber Company 1051
General American Transportation Corporation .....
General Chemical Company 979
General Coal Co. .....
General Electric Company .....
Glidden Company, The .....
Goslin-Birmingham Mfg. Co., Inc. 987
Goulds Pumps, Inc. .....
Groch Engineering Co. .....
Gruendler Crusher & Pulverizer Co. 1118

Hanchett Manufacturing Co. 1113
Hardy, George F. 1105
Harper Company, The H. M. 984
Harrington & King Perforating Co. .. 1103
Harris-Seybold-Potter Co. ..... 2nd Cover
Hermann Mfg. Co., The 1115
Hills-McCanna Company .....
Hi-Way Service Corporation .....
Honan-Crane Corporation .....
Hooper & Sons Co., Wm. E. 1023
Hudson-Sharp Machine Company 1109
Hunt Machine Co., Rodney 1114
Huyck & Sons, F. C. 1062
Hyster Company 985

Improved Paper Machinery Corp. 976
Industrial Steels, Inc. .....
Ingersoll-Rand Company 1047
Ingersoll Steel & Disc. Div., Borg-Warner Corporation .....
International Nickel Co., Inc. 1093
International Wire Works 1118

Jaffrey Mfg. Co., The 988
Jenkins Bros. 1071
Johnson Corporation, The 984
Jones & Sons Company, E. D. 1009
Jones Foundry & Machine Co., W. A. .....

Kalamazoo Tank & Silo Co. 1111
Kalamazoo Vegetable Parchment Co. .....
Kelco Company 1055
Klemp Company, Wm. F. 1113
Kohler System Co., The .....

Langston Co., Samuel M. ..... 3rd Cover
Layne & Bowler, Inc. 1116
Lewellen Manufacturing Co. .....
Lindsay Wire Weaving Co., The 1107
Link-Belt Company .....
Lockport Felt Company 1117
Lodding Engineering Corp. 1050
Lunkenheimer Co., The 1090

Magnetic Pigment Division, Columbian Carbon Company 1115
Magnus Chemical Co., Inc. 1086
Marion Machine, Foundry & Supply Co. .....
Mason-Neilan Regulator Co. 1020
Mathieson Alkali Works, Inc. .....
Michigan Steel Casting Co. 1105
Midwest Piping & Supply Co., Inc. 1053
Monsanto Chemical Company .....
Morris Machine Works 1095
Mt. Vernon-Woodberry Mills, Inc. ....
Murray Mfg. Co., D. J. 1107

Nash Engineering Co., The 1111
National Oil Products Co. 1012
National Publishers Ass'n, Inc. .....
National Research Bureau, Inc. .....
National Safety Council, Inc. 1119
Naylor Pipe Company .....
Nichols Engr. & Research Corp. 1066
Norma-Hoffmann Bearings Corp. 1097
Northern Engineering Works 1109
Norton Company .....
Norwood Engineering Co., The 1103

Oakite Products, Inc. 1101
Ohio Injector Co., The 1044
Oliver United Filters, Inc. .....
Orr Felt & Blanket Co., The .....

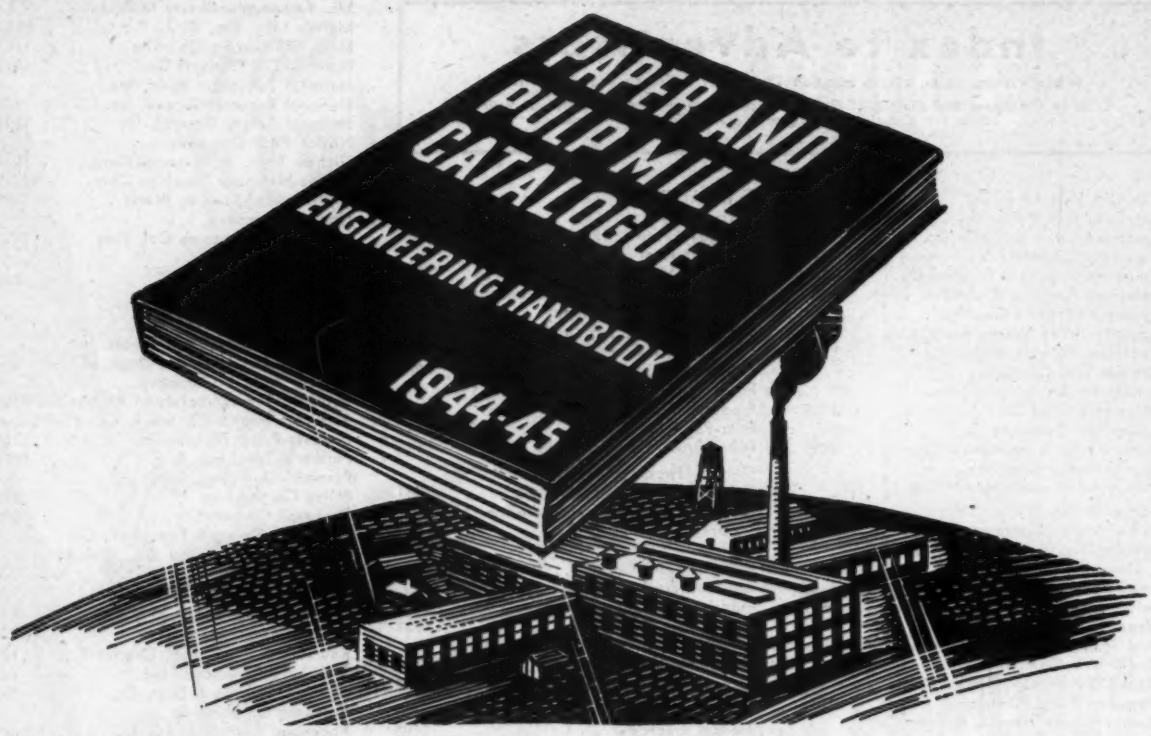
Paper & Industrial Appliances, Inc. ....
Paper Makers Chemical Dept. of Hercules Powder Company .....
Paper Makers' Directory of All Nations 1105
Patterson Foundry & Mach. Co. ... 1st Cover
Peerless Pump Division 1105
Perkins & Sons, Inc., B. F. 1070
Permutit Company, The .....
Philco Corporation 995
Photovolt Corporation 1088
Pittsburgh Piping & Equipment Co. ....
Pittsburgh Plate Glass Co., Columbia Chemical Division 1072-1073
Poole Foundry & Machine Co. 1120
Powell Company, The Wm. 1013
Pusey & Jones Corp., The 993

Raymond Service, Inc., Charles P. 1120
Reichhold Chemicals, Inc. 982
Reliance Electric & Engr. Co. 1049
Research Corporation .....
Rockwood Manufacturing Co. .....
Rodgers Hydraulic, Inc. .....
Rogers & Co., Samuel C. .....
Rollway Bearing Co., Inc. 980
Roofing Machinery Mfg. Co. 1108
Roots-Connersville Blower Corp. 1010
Ross Engineering Corp., J. O. .....
Ryerson & Son, Inc., Joseph T. ... 1024, 1119

Sandusky Foundry & Machine Co. 1103
Sandy Hill Iron & Brass Works, The ... 1014
Shartle Bros. Machine Co. 997
Shuler & Benninghofen 1042
Smith & Winchester Mfg. Co. 1118
Solvay Sales Corporation 1120
Spraying Systems Company 1099
Standard Oil Co. (Indiana) 989
Stebbins Engr. & Mfg. Co. 1096
Stein, Hall & Company, Inc. .....
Stickle Steam Specialties Co. .....
Sutherland Refiner Corporation 999
Swenson Evaporator Company 1079
Taylor Forge & Pipe Works 1015
Texas Company, The 975
Timken Roller Bearing Co., The 983
Titanium Pigment Corporation .....
Towmotor Corporation 1003
Trimbey Machine Works 1105
Turner Halsey Company .....

U. S. A., Treasury Dept. 1068
United States Rubber Company 1059
U. S. Stoneware Co. .....

Valley Iron Works Company 974
Vanderbilt Co., Inc., R. T. 1016
Waldron Corporation, John 1019, 1099
Warren Steam Pump Co., Inc. 1058
Waterbury & Sons Co., H. 1103
Waterbury Felt Co., The 1116
Western Precipitation Corp. .....
Westinghouse Electric Corporation ... 1043
Weyerhaeuser Timber Co. .....
Whiting Corporation 1079
Wilkens-Anderson Company .....
Williams and Co., C. K. 1117
Williams-Gray Company 1097
Worthington Pump & Machinery Corp. .....
Wright Manufacturing Div., American Chain & Cable Co. .....
Wyandotte Chemicals Corporation ... 1087
Youngstown Welding & Engineering Company, The 1065



the 1944-45 Edition . . available at your mill office . .

ready to serve you and your organization in the maintenance and operation of your mill. A larger Catalogue Section with detailed information about the products of the prominent manufacturers that supply the industry. The cross-indexed Buyers Service Section to help you locate sources of purchases for machinery, equipment, chemicals and supplies. The Engineers Handbook extended for your use through the addition of a number of charts and tables.

The PAPER AND PULP MILL CATALOGUE has been edited and produced to serve you. Use it frequently—the more you refer to it, the more helpful it will be to you.

These firms describe their products in the 1944-45 edition—

Allegheny Ludlum Steel Corporation
Allington & Curtis Mfg. Co., The
Allis-Chalmers Mfg. Company
American Cyanamid & Chemical Corporation
American Deflbrator, Inc.
American Paper Mach'y. & Engr. Works, Inc.
Appleton Machine Co., The
Armour & Company
Armstrong Machine Works
Atkins & Company, E. C.
Bagley & Sewall Company, The
Bauer Bros. Company, The
Beloit Iron Works
Benjamin Electric Mfg. Co.
Bigge Boiler Works Company, The
Bird Machine Company
Black-Clawson Co., The
Blaw-Knox Division (Blaw-Knox Company)
Bowser, Incorporated
Buffalo Forge Company
Buffalo Foundry & Machine Company
Buffalo Pumps, Inc.
Cameron Machine Company
Carthage Machine Company
Cash Company, A. W.
Chemipulp Process, Inc.
Chicago Bridge & Iron Company
Chicago Electric Company
Chicago Steel Foundry Company
Clark-Aiken Company, The
Control Equipment Corporation
Covel-Hanchett Company
DeZurik Shower Company
Dilts Machine Works
Dow Chemical Company, The
Downingtown Manufacturing Co.
Duriron Company, Inc., The
English China Clays Sales Corporation
Falk Corporation, The
Farrel-Birmingham Company, Inc.
Fawick Airdex Co., Inc.
Fischer & Porter Company
Fitchburg Screen Plate Company, Inc.
Fleisbel Lumber Company
Foster Wheeler Corporation
Garlock Packing Company, The
General American Process Equipment (General American Transportation Corp.)
Glens Falls Machine Works, Inc.
Golden-Anderson Valve Specialty Company
Goslin-Birmingham Manufacturing Co., Inc.
Graver Tank & Mfg. Co., Inc.
Gruendler Crusher & Pulverizer Co.
Harper Company, The H. M.
Harris-Seybold-Potter Co.
Hauser-Stander Tank Co., The
Hercules Powder Company, Inc.
Hermann Manufacturing Co., The
Hewitt Machine Company, Inc., J. W.
Hills-McCanna Co.
Holyoke Machine Company
Improved Paper Machinery Corporation
Industrial Gear Mfg. Co.
Infilco Incorporated
James Manufacturing Company, D. O.
Jeffrey Manufacturing Co., The
Johns-Manville
Johnson & Carlson
Johnson Corporation, The
Jones & Sons Company, E. D.
Jones Foundry & Machine Co., W. A.
Kalamazoo Tank & Silo Company
Kobler System Company, The
Langston Company, Samuel M.
Lawrence Machine & Pump Corporation
Leader Iron Works, Inc.
Link-Belt Company
Lombard Governor Corporation
Lovejoy Flexible Coupling Co.
Mason-Neilan Regulator Co.
Maxson Automatic Machinery Company
Meisel Press Manufacturing Company
Merrick Scale Mfg. Co.
Michigan Pipe Company
Monsanto Chemical Company
Morris Machine Works
Moyno Pump Div., Robbins & Myers, Inc.
Murray Manufacturing Co., D. J.
National Aluminate Corporation
National Casein Sales
Naylor Pipe Company
Nekoosa Foundry & Machine Works, Inc.
Neville Company, The
Nichols Engineering & Research Corp.
Noble & Wood Machine Co., The
Norma-Hoffmann Bearings Corporation
Northern Engineering Works
Norwood Engineering Company, The
Ohio Grease Company, The
Oliver United Filters, Inc.
Paper & Industrial Appliances, Inc.
Paper Makers Chemical Department (Hercules Powder Co., Inc.)
Pennsylvania Salt Manufacturing Co.
Perkins & Son, Inc., B. F.
Pittsburgh Piping & Equipment Co.
Porter Company, Inc., H. K.
Record Foundry & Machine Company
Robbins & Myers, Inc.
Rollway Bearing Company, Inc.
Roots-Connersville Blower Corp.
Ross Engineering Corporation, J. O.
Sandy Hill Iron & Brass Works, The
Schutte & Koerting Company
Seybold Division, Harris-Seybold-Potter Co.
Shartle Bros. Machine Co.
Simonds Worden White Co.
Simpson Company, The Orville
Sinclair Company, The
Solvay Sales Corporation
Spray Engineering Company
Stainless Steel Division, Pittsburgh Piping & Equipment Co.
Stebbins Engineering & Manufacturing Company
Stein-Hall
Sullivan Machinery Company
Swenson Evaporator Company
Taylor Forge & Pipe Works
Toledo Scale Company
Trimbey Machine Works
Twin Disc Clutch Company
Union Machine Company
Union Screen Plate Co.
Valley Iron Works Company
Waldron Corporation, John
Wallace & Tiernan Co., Inc.
Warren Steam Pump Company, Inc.
Westinghouse Electric & Manufacturing Co.
Whiting Corporation
Wyckoff & Son Company, A.

Please mention the PAPER AND PULP MILL CATALOGUE when making inquiries.

FRITZ PUBLICATIONS, Inc. 59 East Van Buren Street CHICAGO, ILLINOIS

Successful combinations

As a smooth-working team, the fife & drum have long been familiar symbols in our country's history. Another successful combination is the use of Langston's Type "AA" Slitter by The Texas Company in the preparation of saturated asbestos felt for distribution in connection with special uses.

All Langston Slitters and Roll Winders are heavily constructed with balanced drums and idlers to prevent vibration. Bearings, gears and all parts are proportioned to assure maximum service. Noted for exceptional performance with low maintenance costs, Langston Slitters will meet every need in Mill, Finishing Room or Converting Plant.

SAMUEL M. LANGSTON COMPANY, CAMDEN, N. J.

Langston

SLITTERS AND ROLL WINDERS

TEXACO

When you want service *call* Downingtown Manufacturing Co. Phone 500 Downingtown, Pa.

Outside of Office Hours call us at home

ELLIS Y. BROWN, Jr., President
Downingtown, Penna. . . . Phone 252W

E. A. ELLIS, V. P. Chg. of Manufacturing
Glen Loch, Penna. . . . Phone Malvern 2635J4

E. T. STREET, V. P. Chg. of Sales
Exton, Penna. . . . Phone 726

A. E. WALKER, Plant Superintendent
Downingtown, Penna. . . . Phone 7

W. C. ALLEN, Production Superintendent
Downingtown, Penna. . . . Phone 556M

C. H. MULLEN, Machine Shop Foreman
Coatesville, Penna. . . . Phone 0290W

R. C. BERNARD, Erecting Shop Foreman
Coatesville, Penna. . . . Phone 0290J

H. W. RODGERS, Stock and Shipping
Downingtown, Penna. . . . Phone 552J

E. Y. BROWN, 3rd, Purchasing Agent
Downingtown, Penna. . . . Phone 242M

H. C. MERRITT, Chief Engineer
West Chester, Penna. . . . Phone 1793J

C. J. RYDER, Office Engineer
Downingtown, Penna. . . . Phone 189J

W. E. SNYDER, Chief Draftsman
Downingtown, Penna. . . . Phone 259J

OSCAR C. CORDES, Sales Engineer
Upper Darby, Penna. . . . Phone Hilltop 7270

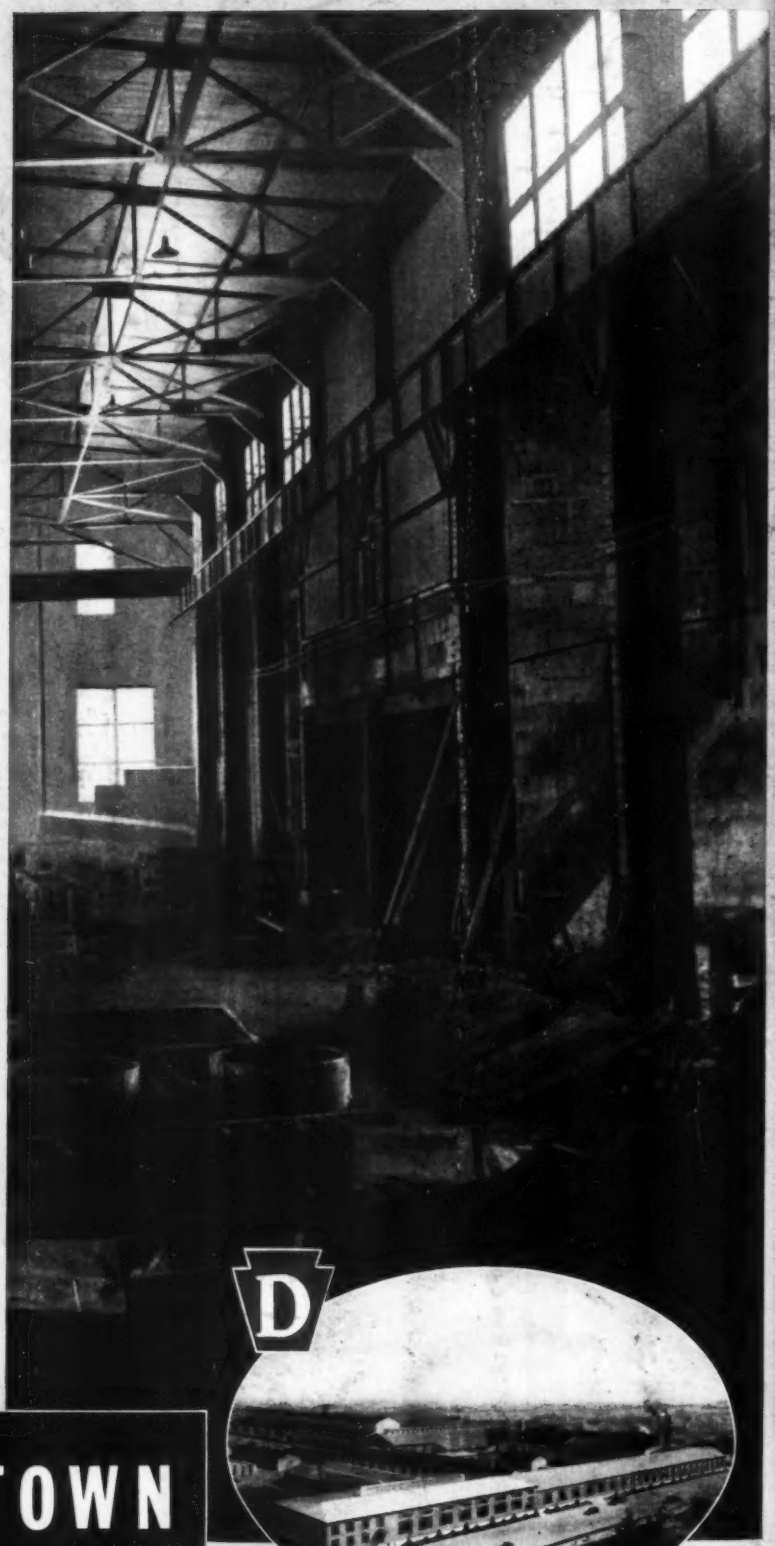
EMERSON N. GLAUNER, Sales Engineer
Downingtown, Penna. . . . Phone 657M

JOHN C. HARPER, Jr., Sales Engineer
West Chester, Penna. . . . Phone 1457

LEON E. SMITH, Sales Engineer
West Chester, Penna. . . . Phone 1948

R. U. TEMPLE, Sales Engineer
Marshallton, Penna. . . . Phone West Chester 513J5

G. CLIFTON WALTON, Sales Engineer
Downingtown, Penna. . . . Phone 127



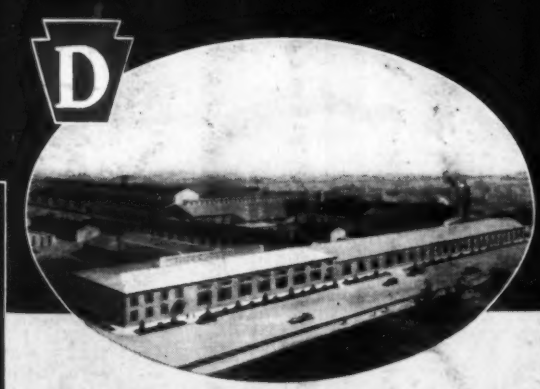


Photo shows a small part of our grey iron foundry, which is a part of our complete modern plant, including engineering dept., pattern shop, machine shop and assembly floor. Maximum number employees close to 400. Total plant area 7½ acres. On main line of Pennsylvania Railroad, 30 miles west of Philadelphia.

DOWNINGTOWN

Designers & Builders
Paper Making Machinery